U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

Oregon State Office
825 N.E. Multnomah Street, Box 2965
Portland, Oregon 97208

May 1988

Planning for the Public Lands in Western Oregon

Proposed State Director Guidance

United States Department of the Interior
Bureau of Land Management

WESTERN OREGON

1988

Scale
10 0 10 20 Miles

BLM Offices in Western Oregon

Oregon State Office
825 NE Multnomah Street
P.O. Box 2965
Portland, Oregon 97208
231-6256

Salem District
1717 Fabry Road, SE
Salem, Oregon 97306
399-5646

Eugene District
1255 Pearl Street
P.O. Box 10226
Eugene, Oregon 97401
683-6600

Coos Bay District
333 South Fourth Street
Coos Bay, Oregon 97420
269-5880

Roseburg District
777 NW Garden Valley Blvd.
Roseburg, Oregon 97470
672-4491

Medford District
3040 Biddle Road
Medford, Oregon 97504
776-4174

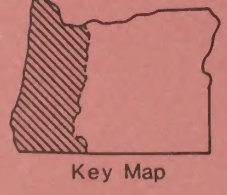
Lakeview District
1000 Ninth Street, S.
P.O. Box 151
Lakeview, Oregon 97630
947-2177

LEGEND

▲ BLM Offices

BLM District Boundary

BLM Lands
(2,386,500 Acres)



Key Map

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May 13, 1988

Dear Concerned Citizen:

Last fall you helped the Bureau of Land Management identify planning topics to guide development of the five Resource Management Plans that our western Oregon districts will simultaneously prepare during the next two years and use during the 1990s. We call the resulting document "Proposed State Director Guidance." Its purpose is to provide a uniform approach to common planning issues of regional concern.

We know the planning process is complex. Much of the guidance proposed in this document is technical and not easy to follow, but we believe this initial work will make the overall process more effective for the public and for those who prepare the plans. We went to look at current situations, possible planning alternatives, and environmental consequences early in the planning process, to avoid future problems resulting from overlooked or inadequate information.

We want to keep the plans and environmental impact statements as concise as possible. We want to be sure the five individual plans contain common designs, so we can identify their cumulative effects. The regional perspective can then be displayed in an executive summary.

We encourage you to comment by July 15, 1988. The Reviewers Guide to the enclosed document includes a section entitled "What You Can Do." It may help you prepare comments. In addition, the District Managers and I have scheduled a series of public information meetings during the comment period, to explain the document to the public. Written comments on the document are encouraged and will become part of the public involvement record which will be on file in the Oregon State Office (Public Room), and all six district offices. We will also note comments that are raised at the meetings, so they can be considered along with written comments in developing final guidance.

Public information meetings are scheduled for the folowing times and locations.

June 7, 1988: 1 p.m., Oregon State Office (15th floor conference room), 825 N.E. Multnomah Street, Portland, Oregon; and 7:30 p.m., Viscount Hotel, 1441 N.E. 2nd Avenue, Portland, Oregon.

June 9, 1988: 1 p.m. and 7 p.m., Roseburg District Office

June 15, 1988: 1 p.m. and 7 p.m., Eugene District Office

June 16, 1988: 1 p.m. and 7 p.m., Salem District Office

June 16, 1988: 1 p.m. and 7 p.m., Coos Bay District Office

June 22, 1988: 1 p.m. and 7 p.m., Medford District Office

June 23, 1988: 1 p.m. and 7 p.m., Klamath Falls Resource Area Headquarters

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I encourage and appreciate the response of the public. If you have questions, or want additional public meetings, please contact one of the western Oregon district RMP team leaders (see Figure 1 in the Reviewers Guide) or Phil Hamilton of the Planning and Environmental Coordination Staff, Oregon State Office (addresses and telephone numbers are listed inside the front cover).

We look forward to your continued interest and participation in the planning process.

The "final" guidance will be completed sometime this fall after consideration of public comments. Copies will be sent to anyone who comments on the proposed guidance or otherwise requests a copy. That "final" guidance, however, may be modified to meet unanticipated needs as the districts begin to apply it in their separate planning efforts, or based on resource information developed at the resource area and district level. Should there be any changes in the "final" guidance, those who have commented during the process of its development will be notified.

Sincerely,

Charles W. Luscher
State Director

Table of Contents

Page

Reviewer's Guide 1
Proposed Guidance 4
Cross District Coordination 4
Chapter 1: Guidance for the Formulation of Alternatives 1-1
Common Alternatives 1-1
Development of Additional Alternatives 1-10
Subalternatives 1-10
Sensitivity Analysis 1-11
Chapter 2: Guidance for Preparation of the Analysis of the Management Situation 2-1
Planning Area Description 2-1
Issues and Concerns 2-1
Review of Existing Decisions 2-2
Legal Guidelines 2-2
Air Resources 2-3
Soil Resources 2-5
Water Resources 2-5
Vegetation 2-7
Timber Resources 2-8
Animals 2-16
Cultural and Paleontological Resources 2-19
Special Areas 2-19
Recreation 2-22
Visual Resources 2-24
Wild and Scenic Rivers 2-25
Wilderness 2-26
Minerals 2-26
Lands and Rights-of-Way 2-27
Roads 2-28
Access 2-30
Fire 2-30
Socioeconomic Conditions 2-33
Chapter 3: Guidance for Analytical Techniques Needed to Estimate Effects of Alternatives 3-1
Assumptions and Analysis Guidelines 3-1
Assessing Effects on Air Quality 3-2
Assessing Effects on Soil Productivity 3-3
Assessing Effects on Water 3-7
Assessing Efects on Riparian Habitat 3-10
Assessing Effects on Fish 3-11
Assessing Effects on Wildlife 3-14
Assessing Effects on Recreation 3-27
Assessing Effects on Mineral Values 3-28
Assessing Effects on Socioeconomic Conditions 3-29
Analysis of Cumulative Effects 3-31
Chapter 4: Guidance for Expressing Consistency with Natural Resources Related Plans, Programs or Policies of Other Agencies 4-1
Federal Agencies 4-1
State Government 4-1
Local Comprehensive Plans 4-3
Tribal Plans and Treaties 4-3
Chapter 5: Guidance for the Executive Summary 5-1
Chapter 6: Guidance for Use of the Completed Resource Management Plan 6-1
Plan Monitoring, Maintenance and Evaluation 6-1
Management of Newly Acquired Lands 6-3
Chapter 7: Glossary 7-1

Reviewer's Guide

Since we started the western Oregon Resource Management Planning effort, we have adjusted our Medford and Lakeview District boundaries. Some 50,600 acres of land formerly administered by the Medford District are now administered by the Lakeview District, through its Klamath Falls Resource Area Headquarters. For continuity in the planning process, however, the Medford Resource Management Plan will continue to address those lands transferred to administration of the Lakeview District. Thus, this document refers to five plans but to six districts.

Resource Management Planning Process and Schedule

The Bureau of Land Management (BLM) manages public lands and resources of western Oregon according to the guiding principles of two major laws, the O&C Sustained Yield Act of 1937 and the Federal Land Policy and Management Act of 1976 (FLPMA). BLM must comply with many other laws and regulations, but these two spellout our general guidelines.

FLPMA requires BLM to develop and implement land use plans to address land use allocations. The Resource Management Plan (RMP) meets that requirement.

Preparing an RMP involves nine interrelated actions or steps, as shown on the schedule and chart (Figure 1). We are now at Step 2, (development of planning criteria) and are focusing on Step 2-b (State Director Guidance). Some planning steps may occur simultaneously, and a step may need to be repeated if significant new information becomes available.

The resulting Resource Management Plan is a general decision document designed primarily to help District and Area Managers make future site-specific and activity-specific decisions and to guide staff efforts. Where more detailed resource management direction is required, activity plans will be prepared after the RMP is completed.

The primary purpose of the State Director guidance is to ensure a uniform approach to the planning process and its products. Natural resource values on BLM lands in the six western Oregon districts often are similar, so a reasonably uniform planning process is desirable. At the same time, each Resource Area and each District is unique in some ways. Although the plans and EISs will be districtwide documents, each plan will be an aggregation of several Resource Area plans. Area Managers need flexibility to develop management prescriptions that fit their geographic area and are appropriate for future management.

An interoffice BLM team, which included Area Managers and RMP interdisciplinary team leaders, developed the initial list of guidance topics by using the following guidelines:

- *The topic relates to one or more multi-district issues, and guidance assures consistency between districts.*

- *The guidance helps district staffs prepare or present the plan more efficiently or effectively.*

- *The guidance helps districts address Federal, State or local resource related plans, policies or programs, thus improving analysis and decisionmaking.*

- *The guidance can be developed in time to be used at the appropriate RMP step. (Some procedures are established by existing manuals, while some RMP guidance cannot be developed until 1989, based on the current plannning schedule.)*

Please keep these criteria in mind as you review the proposed guidance. Also note that State Director guidance is not intended to relate to issues or concerns limited to a single district. Any planning criteria needed for local issues and concerns will be addressed in district-specific planning criteria to be developed for public review by late 1988.

Some planning criteria cannot be developed this early in the process. For example, draft criteria for development or selection of each District's preferred alternative is expected to be published for public review and comment in the spring of 1989. This proposed State Director guidance document does not contain any suggested guidance for the preferred alternative, as it would be premature.

Contents of the Document

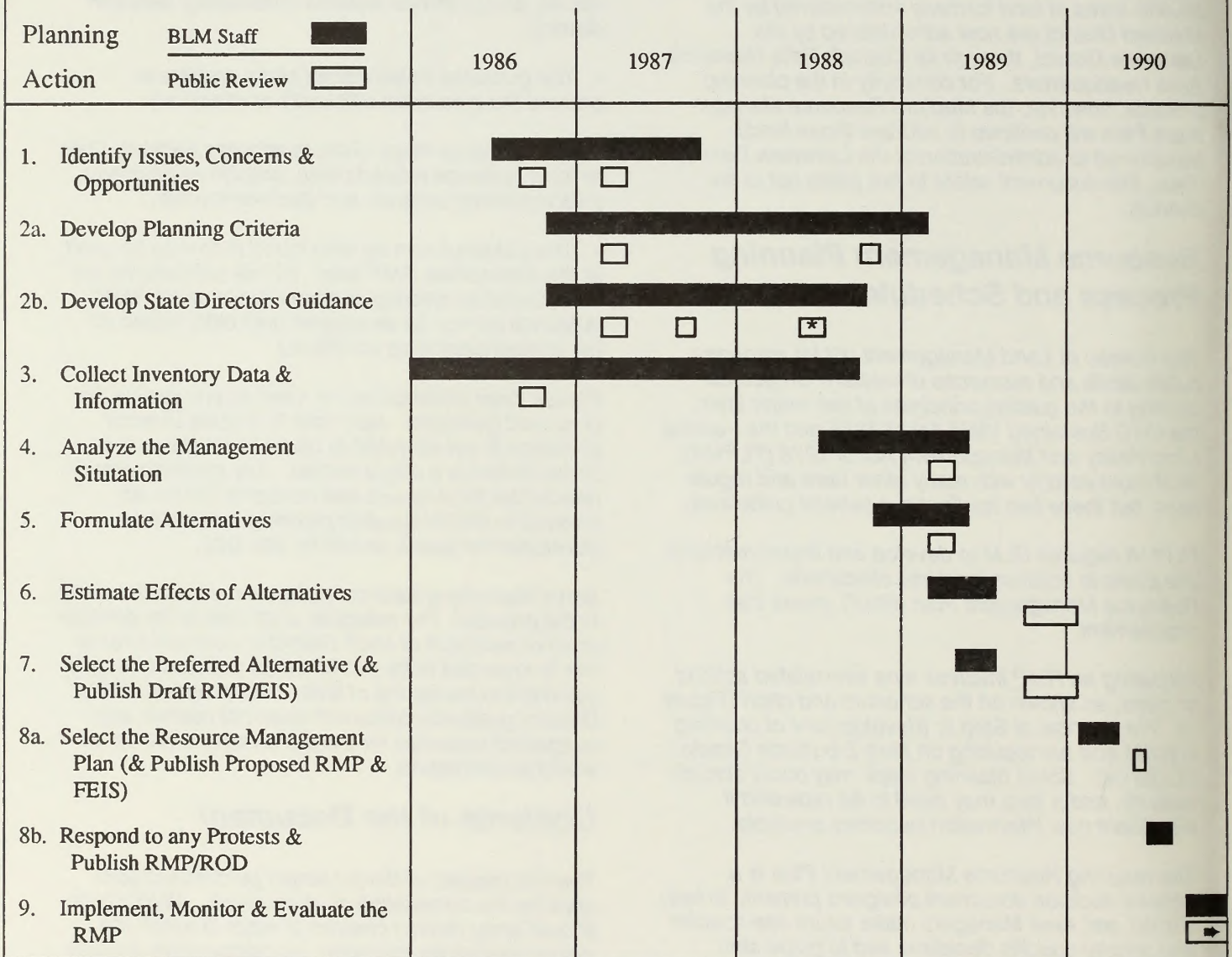
The first chapter of the proposed guidance is guidance for the formulation of alternatives. Alternatives should array distinct choices of ways in which the resources can be managed, for comparative analysis and consideration in the later development or selection of a preferred alternative.

Chapter 2 addresses guidance for Analysis of the Management Situation (AMS). The AMS will describe current conditions and opportunities, and provide a base for detailed design of alternatives and analysis of environmental effects. In plan development, AMS preparation precedes design of alternatives.

The third chapter guides analysis of controversial or complex effects. These effects analyses will form the basis for most of the discussions of environmental consequences in the EISs on the plans.

Figure 1

BLM—Western Oregon—Planning for the 1990s
Proposed Staff Action and Public Involvement Schedule


Planning Action
BLM Staff
Public Review
1986
1987
1988
1989
1990
1. Identify Issues, Concerns & Opportunities
2a. Develop Planning Criteria
2b. Develop State Directors Guidance
3. Collect Inventory Data & Information
4. Analyze the Management Situtation
5. Formulate Alternatives
6. Estimate Effects of Alternatives
7. Select the Preferred Alternative (& Publish Draft RMP/EIS)
8a. Select the Resource Management Plan (& Publish Proposed RMP & FEIS)
8b. Respond to any Protests & Publish RMP/ROD
9. Implement, Monitor & Evaluate the RMP
*

*We are asking for your input at this point in the planning process.

RMP Team Leaders

Coos Bay District
Bob Gunther

Eugene District
Jon Strandjord

Roseburg District
Bob Alverts

Salem District
Bob Saunders

Medford District/Lakeview District
Mary Zuschlag

Chapters 4, 5 and 6 guide addressing consistency with plans and policies of other agencies, development of plan summaries, and use (including monitoring and evaluation) of the completed plans. A master glossary for the planning process is included as Chapter 7.

To the extent possible, each plan will use Automated Resource Data (ARD) supported by Geographic Information System (GIS) technology. These tools provide BLM with greatly enhanced analytical capability and speed. They allow more in-depth predictive modeling of alternatives and better analysis of the consequences of management decisions.

Although we are not yet ready to consider criteria for the preferred alternatives, your interest in resource allocation decisions is also important. Later in the planning process you will have opportunities to express your ideas on preferred allocations.

What You Can Do

As you read each chapter that interests you, consider the questions in the Reviewers Guide at the beginning of that chapter. Send your comments on those questions and any others you consider relevant, to:

Bureau of Land Management (935)
P.O. Box 2965
Portland, Oregon 97208

We need your comments by July 15, 1988. It will also be helpful if your specific comments are identified by page number from the Proposed Guidance. Feel free to suggest other existing data sources, techniques for analysis, or models for data display. Any suggestions that help us keep the guidance concise and effective will be appreciated. If you are particularly concerned about a specific geographic area, local resource value or other local issue, write directly to the appropriate District Manager (see addresses inside the front cover).

Proposed Guidance

This guidance establishes the minimum standards for accomplishment of the specified planning steps. In the absence of specific direction here or in BLM regulations and manuals, the Districts may approach a given topic or concern as they choose. In other words, no guidance provides maximum flexibility. Where the guidance requires narrative discussions, keep them brief in the interest of readability.

Cross District Coordination

To avoid inconsistencies during resource inventory and subsequent planning steps, districts will closely coordinate their Resource Management Planning (RMP) efforts with each other. District Managers will be responsible for inter- and intra-district coordination that is necessary to complete the Plan. District Managers may redelegate coordination responsibilities to Area Managers as appropriate.

State Office program leaders will be responsible for providing inter-district coordination guidance to the Districts. District program leaders will be responsible for providing intra-district coordination guidance to the Resource Areas.

Inventory: All inventories along district boundaries, such as timber production capability classification, wildlife, soils, or visual resources, will be reviewed for consistency. Representatives from adjacent Resource Areas or Districts will meet to maintain consistency and resolve any mapping differences along common boundaries.

Analysis of the Management Situation: Each district will compare their Analysis of the Management Situation with adjacent Districts to ensure data and analysis are consistent along boundary lines.

Alternatives: Common alternatives that identify specific management actions along District boundaries will be consistent. Examples include elk management areas, spotted owl corridors or visual corridors. Selection of preferred alternatives for management of specific lands along District boundaries will be coordinated for consistency.

RMP/ROD: Decisions affecting lands and resources along District boundaries will be coordinated among Districts to ensure consistency.

Implement, Monitor and Evaluate: As much as budget and work force constraints will allow, implementation, monitoring and evaluation of management actions along District boundaries will be consistent.

Chapter 1: Guidance for Formulation of Alternatives

Reviewer's Guide

The purpose of alternatives is to identify a range of reasonable combinations of resource uses and management practices that respond to planning issues and provide management direction for all resources. In developing the array of alternatives, each should be designed to provide a distinct choice among potential management strategies.

Regulations implementing the National Environmental Policy Act require that environmental impact statements "rigorously explore and objectively evaluate all reasonable alternatives..." and "include reasonable alternatives not within the jurisdiction of the lead agency." The range of alternatives is important because it provides the public and decisionmakers with resource production or protection emphasis options. A "no action" continuation of the existing land use plan alternative is also required. In the other alternatives all existing land use decisions not found valid for continued implementation after 1990 (through an analysis that would be summarized in the Analysis of the Management Situation), would be reconsidered.

State Director guidance is needed so that each planning team would consistently apply concepts such as "reasonable alternatives" and "no action" alternative. The proposed guidance also establishes criteria for addressing common issues in a set of six alternatives in each of the five plans, so that region-wide conclusions can be drawn about the effects of possible decisions if these alternatives were applied in all districts.

District criteria for additional alternatives unique to the district, and for unique elements of common alternatives, will be developed early in l989 and made available for public review at that time. The preferred alternative (the proposed action in the EISs) will be developed even later and may combine components from many alternatives.

A number of subalternatives would be developed for the preferred alternative to address issues not directly related to land use allocation. These subalternatives will show the sensitivity of the allowable sale quantity to possible changes in timber management practices and constraints on timber harvest age and the rate of harvest. Additional sensitivity analysis would identify opportunity costs associated with specific allocations and elements of the land use alternatives.

After the Guidance for the Formulation of Alternatives is refined based on public comment and sent to the districts in the fall of 1988, it may still be modified based on: 1) information identified in the districts' analyses of the management situation, 2) creative proposals that emerge from district efforts to develop unique alternatives, or 3) refinements that flow from the districts' site-specific design of the common alternatives.

***Questions To Consider in Public Comments:** We are particularly interested in your responses to the following questions:*

- *Is the range of alternatives that would be established by proposed Alternatives A and F the reasonable range of alternatives required by the National Environmental Policy Act? (We do not intend to have a different range of alternatives in each district; unique district alternatives are expected to fall within the range established by the common alternatives.)*

- *Do the proposed subalternatives address an appropriate subset of timber management issues, to aid in selection of a preferred approach to the timber management components of the plan?*

- *Is the breadth of sensitivity analysis proposed adequate to identify relevant opportunity costs?*

Goals of the Common Alternatives

The purpose of the goal statements for the six common alternatives (A through F) is to guide development of the specifics of each alternative. Each alternative, if implemented, is intended to achieve or meet its goal. Goal statements focus on the general direction of the alternatives rather than the technical points found in the alternatives.

Alternative A

Goal: Emphasize high production of timber, minerals and commercial fish:

- Produce the maximum sustained yield of timber on all suitable and available forest lands
- Manage riparian areas and stream environments so as to protect water quality and fisheries habitat, according to State and Federal law.
- When consistent with the emphasis on timber production, utilize habitat improvement practices to increase fish production and provide for dispersed recreation opportunities.

Alternative B

Goal: Emphasize production of timber and other economically important values on O&C and CBWR lands. Give equal consideration to all resource values on public domain (PD) lands:

- Produce a high sustained yield of timber on suitable and available commercial forest lands, except on those PD lands having greater importance for nontimber uses.
- Provide sufficient protection of riparian areas along major stream environments to protect water quality and fisheries habitat, according to State and Federal law.
- When consistent with the emphasis on timber production on O&C and CBWR lands, utilize habitat improvement practices to increase fish production, and to provide for dispersed recreation opportunities.

Alternative C

Goal: Emphasize timber and mineral production consistent with the variety of other uses of the land such as fish and wildlife habitat, recreation, and scenic resources; give equal consideration to all resource values on public domain lands:

- Provide for a high level of sustained yield timber production on O&C and CBWR lands, and on PD lands where nontimber uses are of lesser importance than timber production.
- Provide substantial protection of riparian areas along major stream environments, to protect water quality and fisheries habitat.
- Contribute to ecological functions important to timber productivity and to habitat diversity, using a system that maintains old growth and mature forest in large and small blocks.
- Provide for a wide range of dispersed and developed recreation opportunities, to minimize conflicts among recreational user groups.
- Manage scenic resources in selected high use areas.

Alternative D

Goal: Provide timber and mineral production consistent with the variety of other uses of the land, including values such as fish and wildlife habitat, recreation, and scenic resources:

- Provide for a moderate level of sustained yield timber production.
- Provide substantial protection of riparian areas along most stream environments, to protect water quality and fisheries habitat.
- Provide minimum habitat diversity using a system that maintains old growth and mature forest, with habitat management objectives for priority wildlife species.
- Contribute to achievement of the Oregon Department of Fish and Wildlife's goal of maintaining a viable population of northern spotted owls. Do this by managing in a manner to insure continued survival of a population of 90 pairs of spotted owls on BLM-administered lands, distributed in a manner to prevent isolating owl populations.
- Provide for a wide range of recreation opportunities emphasizing dispersed use, while reducing conflicts among recreational user groups.
- Manage scenic resources in selected high use areas, particularly emphasizing protection in corridors of existing and proposed wild and scenic rivers.

Alternative E

Goal: Emphasize management and enhancement of values such as diversity of wildlife habitat, recreation opportunities, and scenic resources, consistent with a variety of other land uses, including a moderate level of timber and mineral production:

- Provide substantial protection for riparian areas along all streams, to maintain and improve water quality and fisheries habitat and contribute to wildlife habitat diversity.
- Provide suboptimal habitat diversity using a system that maintains old growth and mature forest, with habitat management objectives for priority wildlife species.
- Emphasize dispersed, nonmotorized recreation opportunities.
- Manage all identified scenic resources.
- Provide for sustained yield timber production consistent with the achievement of other elements of the goal.

Alternative F

Goal: Emphasize management and enhancement of values such as diversity of wildlife habitat, recreation opportunities and scenic resources:

- Manage all riparian areas to maintain and improve water quality and fisheries habitat, and contribute to wildlife habitat diversity.
- Protect all old growth forests during the life of the plan.
- Provide optimal habitat diversity through habitat management objectives for all priority wildlife species.
- Emphasize dispersed nonmotorized outdoor recreation opportunities.
- Manage all identified scenic resources.
- Provide sustained yield timber production levels and mineral production consistent with the achievement of other elements of the goal.

Specific Guidance on Common Alternatives

The common alternatives would differ only in the way they allocate primary uses of lands (for example, lands allocated to intensive forest management, and lands allocated to protection of riparian zones). The lands allocated to intensive forest management under any of these alternatives would normally provide the highest nondeclining harvest level (even flow) of timber when the following conditions prevail:

- The most effective silvicultural techniques (such as clearcutting, shelterwood or partial cutting) for the land allocations are used.
- All economic site preparation and intensive management practices, such as thinning and fertilization, are applied.
- Anticipated merchantability is the only constraint on minimum average stand diameter slated for future harvest. (In some areas this may result in harvest of timber stands as young as 40 years for several decades during the early to middle part of the next century.)
- Adequate budgets are available to support the resultant timber sale program and allied intensive management practices, as well as scheduled monitoring linked to those activities.

The common alternatives assume these practices and conditions on the lands allocated to intensive timber management. They incorporate less intensive management practices on other available forest lands only to the extent needed to be consistent with the allocation of those lands.

The following discussion describes the ten planning issues common to all five RMPs, and how land use allocations and management actions would vary in response to each issue.

Issue No. 1: Timber Production Practices

- Which forest lands will be available for intensive management of timber or for restricted management to enhance other uses on BLM or nearby lands?

- Will BLM use uneven-age silvicultural systems versus even-age (for example, clear cut, shelterwood) to meet other timber production or resource objectives?

- What logging practices will be applied to BLM lands?

- To what extent will BLM maintain or alter the following practices on some or all commercial forest lands?

  precommercial thinning, commercial thinning, fertilization, brushfield and hardwood conversion, and genetic improvement;

  site preparation through manual or mechanical means, use of herbicides, and burning;

  vegetation control through manual or mechanical means and use of herbicides;

  animal damage control by use of pesticides, trapping and tubing.

- Should forest product quality objectives, including product diversity, influence forest management practices or minimum harvest age?

Guidance for All Common Alternatives: The following guidelines would apply to formulating management of the timber resource on lands allocated primarily to timber management. This includes implementation of the following silvicultural and harvest practices to meet multiple land use objectives where biologically, operationally, and economically feasible:

- Reforest harvested lands with adaptable commercial tree species. Emphasis would be placed on utilization of genetically improved stock in accordance with the Western Oregon Tree Improvement plan.

- Manage tree seed orchards to produce adequate supplies of genetically improved seed.

- Use available site preparation and seedling protection practices including herbicides, using an integrated pest management approach. Emphasize those techniques that have proved most effective in assuring seedling survival and growth.

- Convert to conifers commercial forest lands presently occupied by grass, hardwoods and brush.

- Consider hardwood sites for management of a sustained yield of hardwoods.

- Implement commercial thinning of present and future stands where practicable and where research indicates increased gains in timber production are likely.

- Practice initial spacing control of seedlings/saplings through planting or thinning in conjunction with the control of competing vegetation, in order to maximize wood production by concentrating site resources in individual tree growth.

- Plan nitrogen fertilization applications for all present and future stands where research indicates increased wood yields would result.

- Plant specific root disease centers with resistant tree species.

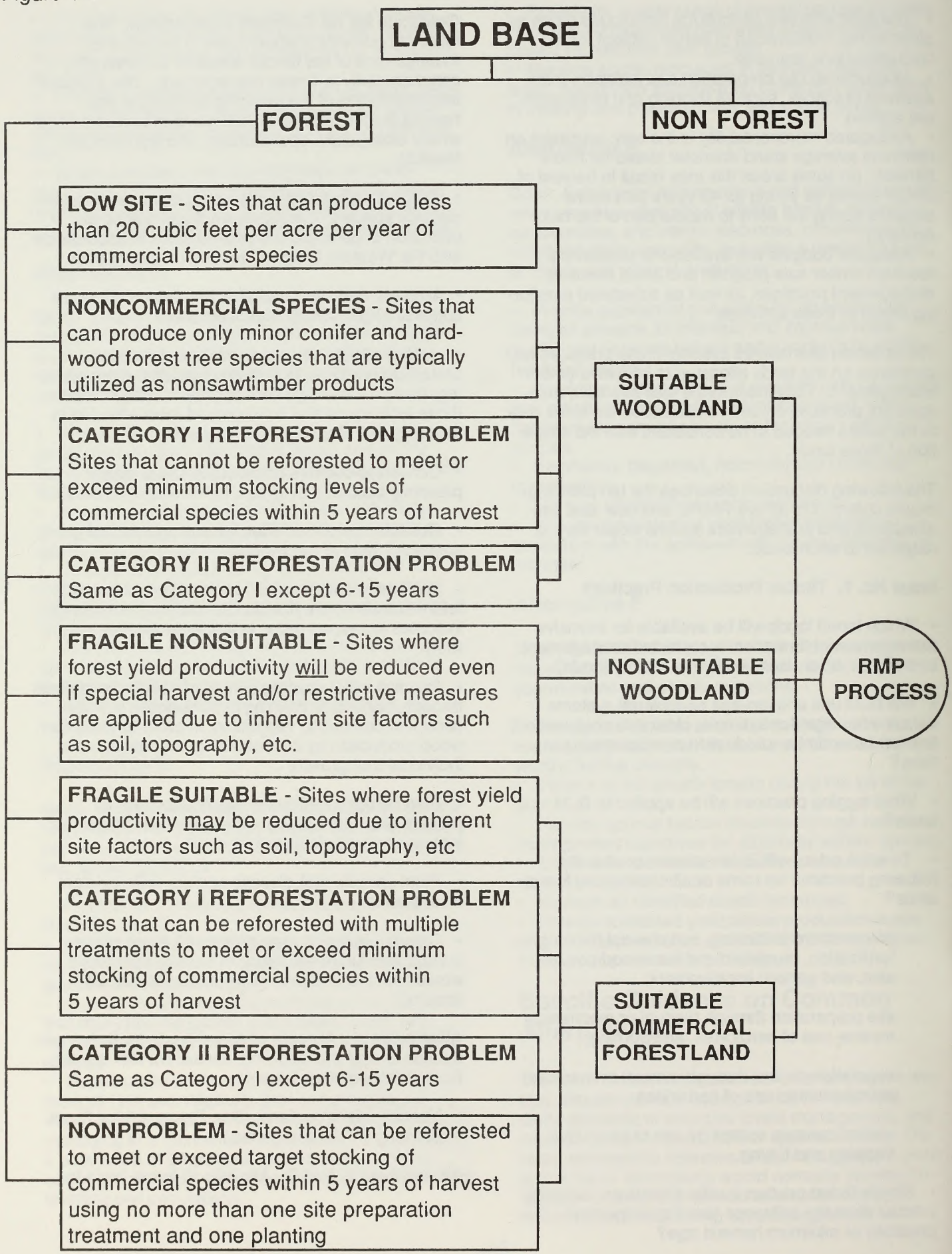
- Clearcut unit size may exceed 40 acres where current and future efficiency of Bureau operations would improve and prompt reforestation can be assured.

Alternative A: Allocate all forest lands for timber production except the following, consistent with allocations resolving other issues:

Nonsuitable Woodland (See Figure 1-1 for Chart showing TPCC categories.)

Alternatives B and C: Allocate all forest lands for

Figure 1-1


LAND BASE
FOREST
NON FOREST
LOW SITE - Sites that can produce less than 20 cubic feet per acre per year of commercial forest species
NONCOMMERCIAL SPECIES - Sites that can produce only minor conifer and hard-wood forest tree species that are typically utilized as nonsawtimber products
CATEGORY I REFORESTATION PROBLEM Sites that cannot be reforested to meet or exceed minimum stocking levels of commercial species within 5 years of harvest
CATEGORY II REFORESTATION PROBLEM Same as Category I except 6-15 years
SUITABLE WOODLAND
FRAGILE NONSUITABLE - Sites where forest yield productivity will be reduced even if special harvest and/or restrictive measures are applied due to inherent site factors such as soil, topography, etc.
NONSUITABLE WOODLAND
RMP PROCESS
FRAGILE SUITABLE - Sites where forest yield productivity may be reduced due to inherent site factors such as soil, topography, etc
CATEGORY I REFORESTATION PROBLEM Sites that can be reforested with multiple treatments to meet or exceed minimum stocking of commercial species within 5 years of harvest
CATEGORY II REFORESTATION PROBLEM Same as Category I except 6-15 years
SUITABLE COMMERCIAL FORESTLAND
NONPROBLEM - Sites that can be reforested to meet or exceed target stocking of commercial species within 5 years of harvest using no more than one site preparation treatment and one planting

timber production except the following, consistent with allocations resolving other issues:

Nonsuitable Woodland
Suitable Woodland - Low Site

Alternative D: Allocate all forest lands for timber production except the following, consistent with allocations resolving other issues:

Nonsuitable Woodland
Suitable Woodland - Low Site
Suitable Woodland - Category I and II Reforestation Problem

Alternative E: Allocate all forest lands for timber production except the following, consistent with allocations resolving other issues:

Nonsuitable Woodland
Suitable Woodland - All Categories

Alternative F: Allocate all forest lands for timber production except the following, consistent with allocations resolving other issues:

Nonsuitable Woodland
Suitable Woodland - All Categories
Lands in excess of the natural angle of repose for local unconsolidated soil types.

Issue Nos. 2 and 3: Old Growth Forests and Habitat Diversity

- Where, and how much if any, old growth and/or mature forest should be retained, maintained or reestablished to meet various resource objectives? What management should be applied to meet the resource objectives?

- What levels of habitat diversity should be provided to help meet wildlife management goals? To what extent and where should BLM manage habitat necessary for populations of native wildlife species?

- Where and how should unique habitats such as lakes, talus slopes, meadows, and wetlands be managed?

Guidance for All Common Alternatives: Any wildlife habitat management practice (such as forage seeding) not listed in the following could be implemented under any of the alternatives, as long as it does not conflict with other management objectives. All unique habitats would be managed to protect their values. Mature and old growth forests would be retained in Congressionally designated areas.

Alternative A: Mature and old growth forests would be retained in the following allocations and TPCC categories:

Nonsuitable Woodland
Recreation sites

Snags would be retained where they occur on Nonsuitable Woodland and if left as nonmerchantable material on available forest lands.

Alternative B: Mature and old growth forests would be retained in the following allocations and TPCC categories:

Nonsuitable Woodland
Suitable Woodland - Low Site
Riparian Management Areas
Recreation sites
Public Domain land where significant, based on scarcity of value and on contribution to habitat diversity; and where Special Areas are designated.

Snags would be retained where they occur on the above listed lands, except where public safety is a concern, and if left as nonmerchantable material on available forest lands.

Alternative C: Contribute to habitat diversity using a system that protects mature and old growth forest in large and small blocks. Mature and old growth components of the forest would be distributed in a corridor system by seed zone and elevation. In the corridor system large blocks of approximately 640 acres would be connected by a series of small, stepping stone blocks of approximately 80 acres, spaced at about one-mile intervals. Blocks would be limited to defined corridor areas.

Public Domain lands and the following allocations and TPCC categories would receive priority for placement into the system, to the extent that they fit; for instance, if they provide needed habitat and are suitably located:

Nonsuitable Woodland
Suitable Woodland - Low Site
Riparian Management Areas
Recreation Sites
Special Areas (Natural Areas, ACECs)

Suitable wildlife trees would be retained to contribute to the maintenance of cavity-dweller populations at 40 percent of the optimum population level. Special snag management practices would be used on the available forest lands.

Alternative D: This alternative is intended to provide minimum habitat diversity through habitat management objectives for all priority wildlife species. This alternative would protect 110 spotted owl areas to provide for 90 pairs of owls, as provided for in the

1987 revised ODFW/BLM agreement. It would allow for substitution of alternate owl areas to be chosen cooperatively with ODFW. This alternative would allocate lands to extended rotations of 350 years and would include provisions for replacement acres (younger age classes). Mature and old growth, representing 10-20 percent of the total forest land, and replacement acres representing approximately 6 percent additional forest lands, would make up the system. Large blocks of about 3,000 acres and small blocks of about 200 acres would be distributed over BLM-administered lands. In some Districts the distribution of blocks may reflect corrridor components. Designated spotted owl habitats would be protected by the large blocks.

Before extended rotations could be started, lands being managed this way should be approaching regulated forest status, meaning all older stages should be appropriately represented in the extended rotation blocks. In districts with limited amounts of old growth or an uneven distribution of seral stages, the large and small blocks would be deferred from harvest until the mature and old growth occupy the target percent of the forest land, approximately three-fifths of that target percent being 200+ years.

Public Domain lands and the following allocations and TPCC categories would receive priority for placement into the system, to the extent that they fit; for instance, if they provide needed habitat and are suitably located:

Nonsuitable Woodland
Suitable Woodland - Low Site
Suitable Woodland - Category I and II Reforestation Problem
Riparian Management Areas
Recreation Sites
Special Areas (Natural Areas, ACECs)

Suitable wildlife trees would be retained to contribute to the maintenance of cavity-dweller populations at 40 percent of the optimum population level. Special snag management practices would be used on the available forest lands. All unique habitats would be appropriately buffered.

Alternative E: This alternative is intended to provide suboptimal habitat diversity through habitat management objectives for all priority wildlife species. It would allocate lands to extended rotations of 350 years and would include provisions for replacement acres. Mature and old growth, representing 20-30 percent of the total forest land, and replacement acres (younger age classes) representing approximately 10 percent additional forest lands, would make up the system. Large blocks of about 3,000 acres and small blocks of approximately 200 acres would be distributed over BLM-administered lands.

Before extended rotations could be started, lands being managed this way should be approaching regulated forest status, meaning all older stages should be appropriately represented in the extended rotation blocks. In districts with limited amounts of old growth or an uneven distribution of seral stages, the large and small blocks would be deferred from harvest until the mature and old growth occupy the target percent of the forest land, approximately three-fifths of that target percent being 200+ years.

Public Domain lands and the following allocations and TPCC categories would receive priority for placement into the system, to the extent that they fit; for instance, if they provide needed habitat and are suitably located:

Nonsuitable Woodland
Suitable Woodland - All Categories
Riparian Management Areas
Recreation Sites
Special Areas (Natural Areas, ACECs)
Wild, Scenic and Recreation River Corridors

Suitable wildlife trees would be retained to contribute to the maintenance of cavity-dweller populations at 60 percent of the optimum population level. Special snag management practices would be used on the available forest lands. All unique habitats would be appropriately buffered.

Alternative F: This is a full ecosystem alternative which would provide optimal habitat diversity through habitat management for all priority species. This alternative would place allocated lands on extended rotations of 350 years and would include provisions for replacement acres. Mature and old growth representing at least 30 percent of the total forest land, and replacement acres (younger age classes) representing approximately two-fifths as much additional land, would make up the system. Large blocks of about 3,000 acres and small blocks of about 200 acres would be evenly distributed over BLM administered lands. Ideal distribution would be to have at least one large block in each township and one small block in each section.

No harvest of old growth would occur during the first decade of the plan. Before extended rotations could be started, lands being managed this way should be approaching regulation. In districts with limited amounts of old growth or an uneven distribution of seral stages, the large and small blocks would be deferred from harvest until the mature and old growth occupy the target percent of the forest land, at least three-fifths of that target percent being 200+ years.

Public Domain lands and the following allocations and TPCC categories would receive priority for placement into the system, to the extent that they fit; for instance, if they provide needed habitat and are suitably located:

Nonsuitable Woodland
Suitable Woodland - All Categories
Suitable Commercial Forest Land on site IV and V lands
Suitable Commercial Forest Land on lands in excess of the natural angle of repose for local unconsolidated soil types.
Riparian Management Areas
Recreation Sites
Special Areas (Natural Areas, ACECs)
Wild, Scenic and Recreation River Corridors

Suitable wildlife trees would be retained to contribute to the maintenance of cavity-dweller populations at 60 percent of the optimum population level. Special snag management practices would be used on the available forest lands. All unique habitats would be appropriately buffered.

Issue No. 4: Threatened and Endangered Species Habitat

- What would BLM do to manage federally listed threatened or endangered plants and animals?

- What would BLM do to manage plants and animals to prevent future federal listing as threatened or endangered species?

Guidance for All Common Alternatives: Manage as legally required. Comply with all Federal Recovery Plans, e.g., bald eagle.

Take the following management actions to prevent future federal listing of plants and/or animals as threatened or endangered species:

Alternative A: Protect all Federal Candidate and State Listed species on other than available commercial forest land.

Alternative B: Protect all Federal Candidate and State Listed species on other than available commercial forest land. In addition, protect all Federal Proposed and Candidate and State Listed species to the extent provided in the O&C Forest Resources Policy Statement of 1983.

Alternative C: Protect all Federal Candidate and State Listed species on other than available commercial forest land. In addition, protect all Federal Proposed and Candidate and State Listed species on O&C and CBWR lands to the extent provided in the O&C Forest Resources Policy Statement of 1983. Protect all of the preceding plus Bureau Sensitive species on Public Domain lands.

Alternatives D, E and F: Protect all Federal Proposed and Candidate, State Listed, and Bureau Sensitive species on all lands.

Issue No. 5: Special Areas

- What areas on public lands need special management to prevent irreparable damage to important historic, cultural or scenic values; to protect botanical or fish and wildlife resources or other natural systems or processes; and to protect life and safety from natural hazards?

- What are the goals for each of these areas?

- Which of these areas should be formally designated as Areas of Critical Environmental Concern (ACEC)?

Guidance for All Common Alternatives: Any areas considered appropriate for Research Natural Area (RNA) designation would also be considered appropriate for ACEC designation.

Alternative A: Existing and potential ACECs that meet criteria, including RNAs and proposed RNAs would be allocated on nonsuitable woodlands and areas of no substantial mineral potential.

Alternative B: Same as Alternative A except that existing ACECs and RNAs may be allocated on Public Domain lands.

Alternative C: Retain all existing ACECs and RNAs. Do not allocate new RNAs on available O&C or CBWR land if a similar feature can be protected on a National Forest. Designate all potential ACECs and RNAs on Public Domain lands, nonsuitable woodlands, and other nontimber allocations.

Alternatives D & E: Retain all existing ACECs. Designate all potential ACECs except if a similar new RNA feature can be protected on a National Forest, do not allocate it on O&C or CBWR lands.

Alternative F: Retain all existing and designate all potential ACECs.

Issue No. 6: Visual Resources

Alternatives A and B: Provide VRM Class I management within existing boundaries of Congressionally designated areas. Manage all other available forest land under VRM Class IV management objectives.

Alternative C: Provide VRM Class I management within existing boundaries of Congressionally designated areas. Provide VRM Class II and III management of highly sensitive public lands adjacent to developed recreation sites, State-designated scenic highways or roads, and State- or Federally-designated wild and scenic rivers or waterways. Manage all other available forest land under VRM Class IV management objectives.

Alternative D: Same as Alternative C, except provide VRM Class II management of sensitive public lands identified in planning, including middle ground areas adjacent to lands protected by wild and scenic river designation or included in BLM proposals for such designation under this alternative.

Alternatives E and F: Manage all lands as inventoried.

Issue Nos. 7 and 8: Stream/Riparian/Water Quality

- Where and how would riparian zones be managed to protect and improve water quality, fisheries and wildlife habitat?

- What special actions would be undertaken to comply with state water quality standards?

Guidance for All Common Alternatives: In those alternatives that would designate "Riparian Management Areas" (RMAs), no timber harvest would be planned within the RMAs. Some timber harvest and other activities may occur, however, to achieve resource management objectives. These activities may include road construction and yarding corridors to facilitate timber harvest outside the RMA. Logging, road building and burning methods would be designed to minimize the number and/or size of mass soil movement events and maintain the integrity of the RMAs. Other activities such as mining, recreation and ORV use would be regulated to maintain and protect water quality. Stream improvement measures may be taken on any streams to improve water quality, fish habitat and/or wildlife habitat. Oregon Forest Practices Act (OFPA) requirements and Oregon water quality standards would be met.

Alternative A: Riparian zones would be protected according to the Oregon Forest Practices Act. Vegetation would be left along water where deemed necessary. All management activities including logging, burning, road construction and maintenance, and silvicultural practices, would be designed to prevent sediments or toxic materials from entering waterways.

Alternative B: Designate the full width of riparian zones along third and higher order streams, other Class I streams (OFPA definition) with anadromous fish habitat, and other water (lakes, ponds) as "Riparian Management Areas." The minimum width of RMAs would be 25 feet on each side of streams as measured horizontally from mean high water levels. For all other streams the same as Alternative A.

Alternative C: Designate full width of the riparian zones along third order and higher streams, Class I streams and other water as RMAs. The minimum width of RMAs would be 50 feet on each side of streams or other water as measured horizontally from mean high water levels.

Alternative D: Same as Alternative C, plus inclusion of the riparian zones of second order streams in RMAs. The minimum width of RMAs would be 75 feet on each side of streams or other water as measured horizontally from mean high water levels.

Alternative E: Same as Alternative D, plus inclusion of the riparian zone of first order streams in RMAs.

Alternative F: Designate as RMAs the full width of riparian zones plus a transition zone of approximately 50 feet along all water. The minimum width of riparian management areas would be 75 feet as measured horizontally from mean high water levels.

Issue No. 7B: Special Water Use

- What would BLM do to manage special needs such as municipal, irrigation and domestic use?

Alternative A: No special management practices would be used, beyond those necessary to meet OFPA requirements.

Alternative B and C: Same as Alternative A, plus design management practices in municipal and community watersheds to maintain water quality at a level that is treatable to the standards of Chapter 333-61 of the Oregon Administrative Rules.

Alternative D: Same as Alternative C, plus the practices required for Class I streams under the Forest Practices Act would apply to "waters designated as Class I solely for domestic use," and to "significant wetlands."

Alternatives E and F: Same as Alternative D, plus management practices in domestic water supply basins shall be designed to maintain water quality at a level that would meet in-stream standards of Chapter 340.41 of the Oregon Administrative Rules.

Issue No. 9: Recreation Resources

- What areas or sites would be designed and/or managed to protect or enhance a variety of recreational opportunities?

Guidance for All Common Alternatives: Manage for dispersed recreation activities consistent with multiple use forest settings, including hunting, fishing, sightseeing, riding/hiking, and rafting. Maintain and manage existing recreation facilities which make available significant dispersed recreation opportunities, including recreation sites, boat ramps, trails, interpretive signs and related improvements. Manage existing Special Recreation Management Areas (SRMAs) and delineate Extensive Recreation Management Areas (ERMAs).

Alternative A: Continue current level of dispersed recreation management. Manage existing recreation sites and trails of high use and development where needed. Close low use recreation sites and trails. Designate "open" to off-road vehicles (ORV) and leave roads open to motorized use, except where such designation would conflict with other allocations.

Alternative B: Same as Alternative A, except support the State's Regional Economic Development Plan for the geographic area. Retain options for new SRMAs and high value potential recreation sites and trails on Public Domain lands.

Alternative C: Same as Alternative B, except maintain and/or improve all existing developed recreation sites.

Alternative D: Allocate and manage new SRMAs. Continue management of all existing recreation sites and trails. Emphasize wildlife viewing, interpretation and related old-growth forest recreation opportunities. Retain options for future development of high value potential sites, trails and sightseeing opportunities. Convert low use/priority recreation sites to undeveloped use areas while retaining their natural settings. Impose additional ORV limitations or road closures to protect wildlife habitat or old-growth forest recreation opportunities, or meet other resource objectives.

Alternatives E and F: Same as Alternative D, except manage for an optimum range of nonmotorized recreation. Retain options for future development of recreation sites and facilities for dispersed recreation opportunities. Prohibit ORV and road use as appropriate to improve wildlife habitat or protect the ecosystem.

Issue No. 9A: Wild and Scenic Rivers

Guidance for All Common Alternatives: Complete eligibility and suitability studies.

Alternative A: No recommendations for designation.

Alternative B: No recommendations, unless they support the State of Oregon's Regional Economic Development Strategy.

Alternatives C and D: Any suitable rivers would be recommended for designation if impact to allowable harvest level is negligible or if designation would support the Regional Economic Development Strategy.

Alternatives E and F: All suitable rivers recommended for designation.

Issue No. 10: Land Tenure

- In what areas would BLM lands be sold, exchanged or transferred out of federal ownership under other authorities to improve management efficiency and benefit resource program objectives?

- In what areas would BLM attempt to acquire lands to improve management efficiency and benefit resource program objectives?

Guidance for All Common Alternatives: A major lands program effort would be use of exchanges to consolidate land ownership patterns to benefit one or more of the resources managed, such as timber, watershed, wildlife habitat, recreation, cultural, botanical, and minerals.

Land tenure adjustment would be guided by a three-zone concept utilizing the following standards:

- Zone 1 includes areas currently identified as having high public resource values, and other efficiently managed lands. The natural resource values may require protection by federal law, Executive Order or policy. These lands may have other values or natural systems which merit long term public ownership. They would generally be retained in public ownership and do not meet the criteria for sale under FLPMA Section 203(a). The Zone 1 boundaries should be relatively close to or on BLM property lines except where the intent is to show preferred acquisition areas.

- Zone 2 includes lands that meet criteria for exchange because they are generally fragmented, are difficult or relatively inefficient to manage, and may not be accessible to the general public. These lands may be blocked up in exchange for other BLM lands in Zones 1 or 2, transferred to other public agencies or given some form of cooperative management. These lands would not be identified as suitable for sale under Section 203(a).

- Zone 3 includes lands that are scattered and isolated with no known unique natural resource values. Zone 3 lands are available for use in exchanges for private in holdings in Zone 1 (high priority) or Zone 2 (moderate priority). They are also potentially suitable for disposal through sale under FLPMA Section 203(a) if important recreation, wildlife, watershed, threatened or endangered species habitat and/or cultural values are not identified during disposal clearance reviews and no viable exchange proposals for them can be identified. The discussion of Zone 3 lands must state which of the disposal criteria in FLPMA, Section 203(a), apply. Zone 3 lands would also be available for transfer to another agency or to local governments, as needed to accommodate community expansion and other public purposes.

Alternative A: Exchanges would be made to acquire lands which would enhance the nondeclining harvest level of the commercial forest land managed by BLM, by improving age class distribution or other harvest level determination factors. Factors to consider include site quality, access to public forest land, logical logging units, and management of public forest land to facilitate timber harvest. No exchanges would be made to acquire lands more valuable for nontimber uses. No commercial timberland would be sold or leased. No leases or conveyance of commercial timberland would be made under the Recreation and Public Purposes Act.

Alternative B: Exchanges of O&C lands would be made to acquire lands which would enhance the nondeclining harvest level of commercial forest land managed by BLM by improving age class distribution or other harvest level determination factors. Consider the same factors as listed in Alternative A. No exchanges of O&C lands would be made to acquire lands more valuable for nontimber uses. No O&C commercial timberland would be sold or leased. Exchanges of public domain lands would be made to benefit one or more of the resources managed, including nontimber values. Sale of public domain lands which meet the criteria for FLPMA Section 203(a) would be made, while leases would be made to accommodate other uses. Leases or conveyances of public domain lands would be made under the Recreation and Public Purposes Act to provide appropriate facilities or services.

Alternative C: Land exchanges would be made to benefit one or more of the resources managed, including nontimber values. Sale of public domain and O&C lands which are not more valuable for permanent forest production would be made to dispose of lands that meet any of the criteria of FLPMA Section 203(a). Leases would be made to accommodate other uses. Leases or conveyances under the Recreation and Public Purposes Act would be made to provide appropriate facilities or services.

Alternative D: Same as Alternative C, except emphasis would be given to exchanges that provide older seral stage habitat for 110 spotted owl areas.

Alternatives E and F: Land exchanges would be made to benefit one or more of the resources managed. Exchanges involving disposal of timber to acquire lands containing greater nontimber values would be emphasized. Sales of public domain and O&C lands which are not more valuable for permanent forest production would be made to dispose of lands that meet criteria (1) or (2) of FLPMA Section 203(a), but sales of land that meet only criteria (3) would not be made. No lands would be leased. Leases and conveyances under the Recreation and Public Purposes Act would be made to provide facilities or services for the benefit of the public.

Development of Additional Alternatives

Districts are encouraged, to develop two or three additional alternatives, focusing on any of the following:

- Different mixes of the allocations in the common alternatives.
- Allocations that differ from those in the common alternatives regarding one or more issues.
- Other allocation opportunities provided by district resource capabilities.
- Ways to minimize tradeoffs between economic and amenity values.
- Developing a mix of resource allocations that would mitigate effects of resource management practices on residents living near BLM-administered lands. (This could also be an element of one of the common alternatives.)
- Providing "stepping stone" blocks of suitable spotted owl habitats, which would link the National Forests of the Cascades, the National Forests of the Siskiyous, and the Siuslaw National Forest in the Coast Range. (This approach may also be considered for inclusion in a common alternative for appropriate districts.)

Such alternatives should fall toward the middle of the alternative range, between common alternatives B and E.

Subalternatives

For the preferred alternative, the following subalternatives would be displayed:

A. The nondeclining harvest level (even flow) under the conditions described in the first two paragraphs of Specific Guidance on Common Alternatives.

B. The nondeclining harvest level if prescribed burning were prohibited or abandoned for other reasons.

C. The nondeclining harvest level if all use of herbicides to aid timber production were prohibited, or abandoned for other reasons.

D. The nondeclining harvest level that would result if all intensive management were foregone.

E. The nondeclining harvest level if no stands younger than culmination of mean annual increment (CMAI) were planned for final harvest, and if all appropriate intensive management practices are applied. The number of years needed to reach CMAI would be determined separately for each selected site index, using appropriate growth and yield data simulation, such as the Stand Projection System Model or Organon. The site indexes to be used would be the same as those calculated from the extensive forest inventory and used in simulating growth and yield.

F. The nondeclining harvest level that would result if B, C, D and E all occurred.

G. The nondeclining harvest level that would result if currently forested commercial forest lands that were removed from the available forest land base because they would be uneconomic to harvest were returned to that base in order to contribute to the local economy. In this subalternative such lands would not be included in the calculation if their return to the available forest land base would conflict with land use allocations of the preferred alternative. (To be displayed only in plans where the potential harvest level would change by more than I MMBF.)

H. The harvest level that would result if a departure of as much as 10 percent above the nondeclining harvest level shown in Subalternative E were selected, provided that any increase does not exceed the long term sustained yield capacity. The harvest level in subsequent decades must not fall more than one percent below the nondeclining harvest level for subalternative E. The potential departure would not exceed that needed to match recent timber supply levels in the market area, as defined by the Local Market Model being developed at the PNW Research Station, USFS. The period for which departure would be calculated would be the period of anticipated regional timber supply deficiency identified for the market area in recent studies. (According to some sources, this might be three decades, from l990 to 2020.)

I. The nondeclining harvest level if minimum average tree diameter of a stand to be harvested were constrained at 12 inches. The number of years needed to reach that size would be determined as in E above, based on growth and yield data.

J. The nondeclining harvest level if minimum average tree diameter of a stand to be harvested were constrained at l6 inches. The same determination procedures as in I above would be used.

One or a combination of these subalternatives will be identified as preferred.

Sensitivity Analysis

Sensitivity analysis is a process of examining specific trade-offs which would result from making changes in single sensitive elements of an alternative. The process is particularly helpful in developing the preferred alternative, to make it most effective in reconciling potential conflicts to optimize overall benefits.

Specific land-use allocations and other decision elements will be subjected to sensitivity analysis at the same time as preliminary analysis of impacts of the initial array of plan alternatives and prior to selection of a preferred alternative. This analysis will identify opportunity costs associated with differing approaches to the most sensitive land use allocations and decision elements. The subalternatives described earlier will provide sensitivity analysis of decision elements not directly related to land use allocation.

Because of the number of land use allocation issues and alternatives, sensitivity analysis must be tightly focused in order to be manageable. The analysis therefore, will focus on mid-range alternatives. At a minimum, the following will be analyzed for each alternative, except the No Action alternative, that falls between common alternatives B and E:

- Effects on timber harvest (ASQ) and on cavity dwellers of substituting the next higher and the next lower alternative levels of snag and wildlife tree protection, and of providing for no specific protection of cavity dwellers on suitable forest or woodland.

- Effects on ASQ and on anadromous fish populations of substituting the next higher and the next lower alternative levels of riparian zone protection, and of providing no specific protection of riparian zones to preserve commercial trees on suitable forest or woodland.

- Effects on big game habitat and populations and on spotted owl populations (number of pairs) and links between National Forests, of substituting the next higher and the next lower alternative levels of old growth and mature forest protection, and of providing no specific old growth and mature forest protection on suitable forest or woodland.

Other elements or increments may be added as deemed appropriate by a district.

Effects on ASQ for each analysis will be quantified and arrayed as in Table 1-1.

Effects on other resource attributes will be quantified only where confidence in quantified conclusions is fairly high (± 20%). Otherwise, effects will be compared to relevant environmental consequence conclusions for the basic plan alternatives.

Table 1-1 – Sensitivity Analysis (partial example using common alternatives)

Allocation or Decision Element	Base Alternative	Allocation or Element From Alternative	ASQ Change	Other Effect Change(s)
Snag and Wildlife Tree Protection	C	B		
		E		
		No Protection		
	D	B		
		E		
		No Protection		
Riparian Zone Protection	C	B		
		D		
		No Protection		
	D	C		
		E		
		No Protection		
Old Growth and Mature Forest Protection	C	B		
		D		
		No Protection		
	D	C		
		E		
		No Protection		

Chapter 2: Guidance for Preparation of the Analysis of the Management Situation

Reviewer's Guide

The Analysis of the Management Situation (AMS) summarizes important information about existing resource conditions, uses, demands and dependency, as well as about management activities and natural relationships. It provides the baseline for subsequent steps in the planning process, such the design of alternatives and analysis of environmental consequences. The AMS also provides most of the data to be summarized in the "affected environment" chapter of the EIS.

Geographic (map) displays used for analytical purposes may not be reproducible in all cases. AMS summaries, which will be published, will probably not use oversize or multi-color maps. Maps that are not reproducible will be referenced in the AMS and will be available for inspection at District Offices during normal workin hours.

***Questions To Consider in Public Comments:** We are particularly interested in your response to the following questions:*

- *Will the data proposed be adequate for the purposes described above?*

- *Will the data proposed be adequate to establish a basis for addressing the identified issues?*

Introduction

This AMS Guidance supplements the Bureauwide guidance set forth in BLM Manuals 1612, 1616, 1618, 1621, 1622, 1623, 1624, 1625, and 3031. The Guidance calls for a number of narrative discussions. All of these narratives should be kept concise. Discussions of current management direction should be derived from the existing Management Framework Plans (MFPs) and Timber Management EIS records of decision.

The AMS will discuss substantial opportunities for maintenance or enhancement of resources that BLM manages, and will quantify data where available information permits. The AMS should discuss the assumptions used, and document their rationale and the calculations made in developing this information. Rationale should be supported with references to the literature, personal communications, district inventory/ monitoring data or other AMS sections. Guidance sections calling for display of "available" or "known" data, refer to data already available in Bureau files or from other agencies. Utilization of data that can be obtained from other agencies will be important. The Guidance should not be interpreted as demanding data that cannot be obtained within budget allocations available in 1988.

Planning Area Description

Prepare a brief narrative description of the planning area including Resource Areas and Master Units.

Also include the following: A table showing by county the acres of O&C, public domain, CBWR, and split estate lands; and a map of the planning area showing major classes of land ownership including BLM lands, USFS lands, other Federal lands, State lands, split estate, and private lands.

Issues and Concerns

Use the following discussion or something similar.

> Early in the planning process, the public and BLM employees were invited to help the _____ District identify planning issues and concerns relating to the management of public lands in this area. Based on a review of these comments, the following planning issues and concerns have emerged which will form the foundation on which to structure planning criteria and to build alternatives.

Follow this statement with a listing of the planning iues and concerns as set out in the District Issue and Concerns Summary mailer of March 27, 1987, plus any new issues or concerns that have arisen since that time. (The concern relating to the Nationwide Rivers Inventory will be dealt with as part of the Recreation Resources issue.)

Review of Existing Decisions

One of the purposes of the Analysis of the Management Situation is to determine which management decisions need not be reexamined in the Resource Management Plan.

In order to make this determination, districts will review their existing Management Framework Plans, activity plans, District Instruction Memorandums, and Environmental Impact Statements to determine which decisions are valid for continued implementation through the 1990s. The requirements for determining which decisions are valid are defined in BLM Manual 1618.2. Decisions that are valid and will be incorporated into the Resource Management Plan must be reviewed and documented in the Analysis of the Management Situation.

Two types of resource decisions valid for continued implementation will be identified in the Analysis of the Management Situation:

1. The decisions that are valid for continued implementation through the 1990s and are supported by an Environmental Impact Statement (EIS) will be restated or summarized to incorporate them into the RMP without additional analysis.

2. Decisions which are valid for continued implementation through the 1990s, but are not addressed in an EIS or fully supported in terms of analysis, may be handled in the RMP and associated EIS by setting them forth for reexamination and review. This type of valid decision would also be common to all alternatives, but the analysis would be incorporated into the environmental consequences section of the EIS.

These two types of resource decisions should be identified in two separate tables. The format of Table 2-ED-1 is recommended for both.

Table 2-ED-1 – Review of Existing Decisions

Resource	Decision or Document Number	Summary	Status of Decision
(Forestry/ fisheries, etc.	(MFP, EIS)	(A short summary of the decision)	(Is the decision being implemented? Why is it valid?)

Legal Guidelines

Use the following prepared list of the major legal guidance for planning and management of lands administered by BLM in western Oregon. This list is not necessarily all inclusive but does represent the primary legal guidance to be considered in preparation of Western Oregon Resource Management Plans.

Major Legal Guidance for BLM in Western Oregon

Federal Land Policy and Management Act of 1976 (FLPMA).
The O&C Sustained Yield Act of 1937.
National Environmental Policy Act of 1969 (NEPA).
Executive Order 11514–Protection and Enhancement of Environmental Quality.
Recreation and Public Purposes Act of 1926.
Unlawful Enclosures or Occupancy Act of 1885.
Mining Law of 1872.
Mineral Leasing Act of 1920, as amended.
Mineral Material Sales Act 1955.
Mining and Minerals Policy Act of 1970.
Geothermal Steam Act of 1970.
Executive Order 11644, Use of Off-Road Vehicles on the Public Lands (1972).
Executive Order 11989, Off-Road Vehicles on Public Lands (1972).
The National Wild and Scenic Rivers Act of 1968.
Land and Water Conservation Fund Act of 1965.
Clean Air Act of 1967, as amended.
Antiquities Act of 1906.
Historic Sites Act, 1935.
Reservoir Salvage Act of 1960, as amended in 1974.
Historic Preservation Act of 1966, as amended in 1976.
Executive Order 11593, Protection and Enhancement of the Cultural Environment.
Archaeological Resource Protection Act of 1979.
Native American Religious Freedom Act of 1978.
The Coastal Zone Management Act of 1972.
Bald Eagle Protection Act of 1940.
Migratory Bird Treaty Act of 1918 and Conventions.
Endangered Species Act of 1973.
Fish and Wildlife Coordination Act of 1958.
Sikes Act of 1972.
Soil and Water Resources Conservation Act of 1977.
Executive Order 11988, Floodplain Management (1977).
Executive Order 11990, Protection of Wetlands (1977).
Federal Water Pollution Control Act of 1948, as amended.
Safe Drinking Water Act of 1974.
Resource Conservation and Recovery Act of 1976.
Comprehensive Environmental Response, Compensation and Liability Act of 1980.
Taylor Grazing Act of 1934.
Wild Free-Roaming Horse and Burro Act of 1971.
Wilderness Act of 1964.
Oregon Wilderness Act of 1984.

Air Resources

Introduction

Use the following prepared discussion:

> Congress passed the Clean Air Act in 1967 and amendments to the Act in 1972 and 1977. This law gives the State the responsibility for the administration and enforcement of air quality standards along with visibility in Class I areas, through their State Implementation Plan (SIP). The SIP also specified a 22% reduction in emissions (compared with 1982-1984 emissions) by the end of the year 2001, with a review in 1990 to determine whether or not "reasonable progress" has been made.
>
> The Oregon Smoke Management Plan, which is companion legislation to the SIP, has classified certain areas as "designated areas" and "smoke sensitive areas." The current management plan requires that prescribed burning be done only when atmospheric conditions prevent smoke from deteriorating the air quality of these areas.

Existing Conditions

Display a map showing those "designated areas," "smoke sensitive areas," Class I areas, and Class II areas with potential of becoming Class I areas (wilderness areas over 10,000 acres), which have the potential of being affected by the district's prescribed burning activities.

Discuss how smoke emissions from prescribed burning are dependent upon fuel loadings, fuel moisture and weather conditions and how (if applicable on the district) the trend has been from fall burning (unfavorable atmospheric conditions and higher emissions per acre) to spring-like conditions (more favorable atmospheric conditions and lower emissions per acre).

Display Table 2-AIR-1. In other recent BLM analyses in western Oregon, the 1976 – 1979 baseline period has been used to apply the methodology developed by Sandberg et al., and is the preferred baseline period. However, shorter periods (e.g., 1977 – 1978) may be used if they provide more complete and more reliable data.

During the baseline period, no consistent records were kept of acres being burned. The Oregon Smoke Management Reports may be useful to determine acres burned during the baseline period. Since the annual reports did not begin reporting acres burned by owner until 1981, the average since then (BLM's portion) should be used and projected backwards against the total acres burned each year during the baseline period, to estimate acres burned by BLM each of those years. Display this data in Table 2-AIR-2 along with consumption rates and tons consumed. For the baseline years use the mid-value for calculated baseline from Table 2-AIR-1; for years following the baseline, use the 1984 mid-value from the same table. Summarize smoke intrusions in Table 2-AIR-3.

Table 2-AIR-1 – Biomass Consumption Estimates (Average Consumption)

	Calculated Baseline (Baseline Years)			Calculated (1984)		
Category	**High**	**Mid**	**Low**	**High**	**Mid**	**Low**
	(tons per acre)			*(tons per acre)*		
Duff	32.3	29.3	26.4	30.0	21.3	15.0
Woody < 3"	12.3	12.3	12.3	13.2	9.5	6.7
Woody > 3"	16.3	16.0	15.7	14.5	11.0	8.2
Rotten	2.7	2.7	2.6	2.5	2.2	1.9
Total	63.6	60.2	56.9	60.2	44.0	31.8

Source: Sandberg, D.V., J.L. Peterson, and R.D. Ottmar 1985. Daily Slash Burn Emissions Inventory Design - Year 1, Final Report. USDA Forest Service, PNW Forest and Range Experiment Station. Tables 8 and 12.

Sandberg's figures for Duff of 4 inches can be modified to match the district's conditions (e.g., for 2 inch duff depth reduce figures by 50%).

Table 2-AIR-2 – Annual Slash Consumption

Year	BLM Acres Burned	Consumption Rate (Tons/Acre)	Tons Consumed
Start with 1st yr. of baseline			
1977			
1978			
1979			
1980			
1981			
1982			
1983			
1984			
1985			
1986			
1987			
Baseline Avg. (years used in Table 2-AIR-1)			
1982-1984 Avg.			
1985-1987 Avg.			
Total Avg.			

Table 2-AIR-3 – Smoke Intrusions In ____ From All Landowners

	No. of Smoke Intrusions		
Year	**Total**	**BLM**	**Days**
1976			
1977			
1978			
1979			
1980			
1981			
1982			
1983			
1984			
1985			
1986			
1987			

(Source from State Dept. of Forestry Annual Reports of Smoke Management Plans. Separate BLM from total as far back as data permits.)

If more than one source of smoke is listed, fill in both total and BLM.

Current Management Direction

Discuss the current management situation regarding impact on restricted airsheds (coordination with OSDF, monitoring smoke columns from aircraft). Also discuss current efforts to reduce emissions (mass ignition, aggressive mop-up, gross yarding, planting unburned units).

Management Opportunities

Identify the opportunities to further reduce emissions and intrusions. This can include chipping, firewood sales, and the opportunity to leave residue on site for wildlife, nutrient cycling, etc.

Soil Resources

Introduction

Discuss soil properties which affect soil productivity and those management activities which will affect soil productivity (i.e., road construction, timber harvest, slash burning, etc.).

Existing Conditions

Display a general soils map of the district with a legend. Use the new SCS general soil map of Oregon which is at the soil association level.

Display acreages and percent of the total land base for lands listed in the 1990 TPCC as Fragile Non-suitable Woodland, as shown in Table 2-S-1.

Table 2-S-1 – Fragile Nonsuitable Woodland*

Classification of Woodland	Acres	% of Total BLM Land Base
Soil Moisture		
Nutrient		
Slope Gradient		
Mass Movement Potential		
Surface Erosion		
Potential Groundwater		

*These are lands where the timber growing potential is easily reduced due to the soils having critical moisture supply capacities, severe nutrient problems, critical slope gradients, mass movement potential, severe surface erosion potential, or high ground water levels. See the "TPCC Classification" BLM Manual Supplement, Oregon State Office, Handbook 5251-1 for more detailed description.

If available, summarize the results from monitoring of surface erosion, soil compaction, and slash burning.

Current Management Direction

Discuss district goals and/or methods for protection or mitigation of soil productivity losses. Discuss the effects/results of current management practices on long term soil productivity.

Management Opportunities

Identify substantial opportunities to maintain or enhance soil productivity (i.e., fertilization, tillage of old skid roads, etc.)

Water Resources

Introduction

Discuss water quality and quantity and describe the units of measurement (i.e., yields, temperature, etc.)

Discuss the interrelationships between water and activities on BLM lands which have the potential to affect water quality and quantity. At a minimum these should include timber harvesting site preparation and road construction.

The following criteria will be used in delineating analytical watersheds within the planning area:

- The Hydrologic Unit Map for the State of Oregon will be used as a reference for drainage basins (Hydrologic Units).
- Hydrologic Units will be subdivided into major watersheds using 50,000 to 150,000 acres as a target size.
- The upper limit of each watershed within the planning area boundaries will be defined by the major divide regardless of where the planning area boundary lies.
- The lower limit of each watershed will be at the mouth or the closest ridge lines downstream of BLM-administered land.
- Front facing or other logical watersheds may be delineated when necessary.
- Flexibility to further subdivide a watershed will be permitted to address issues pertinent to each planning area.

Prepare a map displaying the location of analytical watersheds.

Existing Conditions

Describe the general condition of the water resource on BLM-administered land, with its values and uses. This shall include:

- Describe the analytical watersheds in Table 2-WA-1.

Table 2-WA-1 – Planning Area Analytical Watersheds

Watershed Name	Total Acres of Watershed	% Watershed in BLM Management

- By analytical watershed, list the miles of stream by order. This shall include all lands (where data is available).

- By analytical watershed and only for BLM lands, summarize the miles and acreages of riparian areas and their characteristics by stream order (3rd order and larger).

- List lakes and water impoundments, on BLM lands, along with their size and use.

- List any wetlands on the District that have been identified by the U.S. Fish and Wildlife Service.

- Give an overview of the ground water system in the area, general location of ground water withdrawals and known uses, e.g., irrigation. Also note any sole source aquifer that is identified by EPA.

- Identify community watersheds in tabular form using the format in Table 2-WA-2.

Table 2-WA-2 – Community Watersheds

		Water Type				Watershed Area (Acres)		
Watershed Name	Drinking Water System	Surface	Ground	Filtered	Population Served	BLM	Other	Total

- Discuss water quality of any community watershed known to have a problem.

- Identify by analytical watershed the beneficial uses as listed in the Oregon Administrative Rules, Chapter 340-41. This will be in tabular form as shown in Table 2-WA-3.

Table 2-WA-3 – Beneficial Uses by Analytical Watershed (example)

Beneficial Uses	Watershed Name	Watershed Name
Public Domestic Water Supply		X
Private Domestic Water Supply	X	X
Industrial Water Supply		
Irrigation	X	
Livestock Watering		
Anadromous Fish Passage	X	X
Salmonid Fish Rearing		
Salmonid Fish Spawning		X
Resident Fish & Aquatic Life		
Wildlife and Hunting	X	
Fishing	X	
Boating	X	
Water Contact Recreation	X	X
Aesthetic Quality	X	
Hydro Power		
Commercial Navigation and Transportation		

- Identify watersheds which are particularly sensitive to activity.

- Identify any streams where violations of water quality standards have occurred in recent years. Include the standard that was exceeded and its cause and source if known. Sources of this data will be BLM monitoring and the DEQ 319 Assessment Report. Discuss reliability of this data.

Current Management Direction

Summarize present BLM management direction related to maintenance and improvement of water quality.

Demand

Discuss any expected future demands for water use from BLM lands.

Management Opportunities

Discuss any opportunities for enhancing water quality and quantity.

Vegetation

Introduction

Describe the major plant community groupings found and the seral stages for each major grouping from disturbance to potential natural community.

Describe the natural successional process and the frequency and type of natural disturbance which begins that process.

Describe how human activity has influenced plant groupings in the past and may affect future plant communities and successional patterns.

Existing Conditions

Describe/display the aquatic, wetland, riparian and upland vegetative communities pertinent to the planning area. Minimum documentation should include:

Major plant groupings which are aggregations of plant associations with similar management potential and with the same late seral or climax dominant species and the same major early seral species. Groupings are named by the late seral conifer species or species mixtures and the major non-conifer early seral species. Geographic terminology may be added where clarification is needed. Examples include:

Douglas-fir/tanoak–madrone grouping
Mixed conifer/interior Siskiyou/grass grouping
Douglas-fir–pondera pine/ceanothus/herbacious grouping
True fir–hemlock/shrub/herbacious grouping

For each major plant grouping identify the following seral stages: early, mid, late, mature, and old growth (see Glossary for separate definitions). The age classes within a seral stage may vary among districts.

Threatened and Endangered (T&E) and other priority plant species occurring in the planning area.

Unique ecosystems found in the planning area, such as beaches and dunes, talus slopes, meadows, wetlands, etc.

Noxious plants occurring in the planning area.

Table 2-V-1 should be prepared for BLM-administered lands:

Table 2-V-1. Priority Plant Species

Plant Name		
Botanical	**Common**	**Status***

*Federal Listed by U.S. Fish & Wildlife Service and the National Marine Fisheries Service:
FT = Federal Threatened
FE = Federal Endangered
FP = Federal Proposed
FC = Federal Candidate

*State Listed:
ST = State Threatened
SE = State Endangered

BS = Bureau Sensitive

Prepare a map displaying the information contained in Table 2-V-1.

Refer to section on Water for additional information on acres of lakes, ponds, impounded water, wetlands and riparian areas.

Current Management Direction

Discuss current management direction for T&E and other priority plants, unique ecosystems, wetlands, aquatic vegetation and noxious plants.

Discuss the status of inventories for T&E and other priority plants and unique ecosystems.

Where appropriate, discuss monitoring requirents and management effectiveness for the following:

Noxious plants
T&E plants identified in the MFP or Record of Decision for the 1979-1983 Plans.

Describe how other programs impact T&E and other priority plants, unique ecosystems, wetlands, aquatic vegetation and noxious plants. As a minimum, and where appropriate, discuss the following programs:

timber management
fish and wildlife management
recreation management
minerals management
grazing management
prescribed fire management

Management Opportunities

Discuss management opportunities for protection/improvement of T&E and other priority plants, unique ecosystems, wetlands, aquatic vegetation and control of noxious plants.

Timber Resources

Existing Conditions

Describe/display forest conditions pertinent to the planning area. Both past and present conditions should be described. Minimum documentation should include a description of the commercial timber species and the noncommercial tree species.

The following tables will be prepared:

Acres of forest land by ownership and county. See Table 2-T-1 at the end of this section.

Volume of growing stock and sawtimber on commercial forest land by county. See Table 2-T-2.

TPCC summary. See Table 2-T-3.

Acres of BLM lands included in congressionally designated areas. See Table 2-T-4.

Age class distribution on BLM lands as of October 1, 1988. See Table 2-T-5.

Age class/site class distribution on BLM lands as of October 1, 1988. See Table 2-T-6.

Reforestation classifications and treatments accomplished on BLM suitable commercial forest land by stand age as they existed October 1, 1988. See Tables 2-T-7.

Stand treatment accomplishments by age class as they existed October 1, 1988. See Table 2-T-8.

Display the relationship between Scribner long log, short log and cubic foot for varying log sizes.

Prepare a map displaying the suitable BLM commercial forest land and suitable woodland.

Prepare a map displaying the location of mature and old-growth stands on BLM-administered lands, as they existed (unsold) October 1, 1988.

Current Management Direction

Describe/display current management direction from the Timber Management EIS records of decision (RODs) and the Management Framework Plan. Minimum documentation will include projected ten-year outputs and actual accomplishments from the inception of the current plan through October 1, 1988.

Describe/display the commercial forest land base for the 1979-1983 RODs and the new suitable commercial forest land base for 1990. Compare differences and discuss reasons for significant differences.

Describe silvicultural and harvesting practices, and rationale.

Prepare a table showing minor forest products (including fuelwood) harvested each fiscal year from 1984 through 1988.

Describe the use and demand for fuelwood within the planning area. Provide a rough percentage of the amount of local fuelwood provided by the Bureau permit program.

Describe how other programs or activities affect the timber management program. As minimum, the following interrelationships, excluding land-use allocations, should be discussed:

fish and wildlife management
T&E and sensitive species management
watershed management
prescribed fire management
minerals management
recreation management
visual resource management

Demand

The demand for timber resources is discussed in the Socioeconomic Conditions section.

Management Opportunities

Discuss/display opportunities to enhance the production of forest products. Opportunities must be technically feasible, practical and effective. Discuss problems that may prevent suitable commercial forest land from being intensively managed. For example, there may be situations where suitable commercial forest land cannot be reforested to minimum stocking standards within five years if the use of herbicides and/or prescribed burning were restricted/prohibited. Theremay also be areas where biological, physical or economic constraints result in it being uneconomical/ unfeasible to harvest or reforest suitable commercial forest land.

The following opportunities should be included in this discussion:

Describe/display the highest nondeclining harvest level subject to legal protection requirements for all other resources. The harvest level displayed will be utilized in common Alternative A.

Determination of the highest nondeclining harvest level is dependent on the operable land base. Consider the following or other relevant legal constraints on the commercial forest land base:

management for the protection of bald eagles
management of riparian areas for the protection of water quality under the Forest Practices Act
management for designated Wilderness Areas
management of designated Wild and Scenic Rivers
management for Congressionally designated County Parks

The following assumptions are to be used to derive this harvest level:

- Funding will be available for all practices.
- Manage all forest lands except legally constrained lands or nonsuitable woodland for timber production.
- Emphasize clear cut and shelterwood harvesting followed by tree planting.
- Forty acres clear-cut unit size may be exceeded to create an efficient harvest unit where reforestation can be assured within five years after harvesting.
- Use all available tools (including herbicides) for site preparation, seedling protection, plantation maintenance and release with emphasis on those tools that have proven to be most effective in assuring seedling survival and growth.

- Reforest harvested lands with adaptable commercial species. Emphasize the utilization of genetically improved stock in accordance with the Western Oregon Tree Improvement plan.

- Manage tree seed orchards to produce adequate supplies of improved seed.

- Reforest root disease centers with resistant or disease tolerant commercial species.

- Practice initial spacing control of seedlings/saplings through planting or thinning in conjunction with the control of competing vegetation in order to maximize wood production by concentrating site resources in individual tree growth.

- Practice commercial thinning of present and future stands on those lands judged operable and where research indicates increased gains in timber production are likely.

- Apply fertilizer on all present and future stands where research indicates increased wood yields will result.

- Convert to conifers all commercial coniferous forest sites presently occupied mostly by grass, hardwoods and brush.

- Consider management of hardwood sites for a sustained yield of those species.

Note: A hardwood site is defined to be a site occupied by hardwoods and not suitable for the production of coniferous species.

Trim-Plus will be utilized for harvest scheduling and timber supply modeling. The Stand Projection System (SPS) and/or Organon models will develop specific growth curves for various stands or silvicultural practices utilized in the Trim-Plus Model. These models will be used to determine ASQ levels.

The following criteria should be utilized for silvicultural practices and yield table development for the stand models:

Density control in plantations

The acreage in plantations that qualify for density control will be identified through the MICRO*STORMS data base and other records. Plantations should be subjected to density control through precommercial thinning, manual release or combination thereof if the density significantly (25 percent) exceeds the initial number of trees per acre needed to produce the timber yields under the silvicultural regime(s) selected.

Commercial thinning

The thinning should produce an increase in total net yield as indicated by managed stand yield simulations.

The volume removed should make an economic logging show.

All stands previously thinned or subjected to density control will be considered for commercial thinning.

A maximum of two commercial thinning entries will be scheduled, with the final entry occurring at least 10 years prior to final harvest.

Operability of all slopes will be evaluated in terms of soil characteristics, topography and potential damage to the residual stand.

Maximum cable logging distances are assumed to be 1500 feet uphill and 800 feet downhill.

Tractor logging will be limited to slopes under 35 percent with a maximum skidding distance of 1200 feet.

Forest fertilization

Forest fertilization opportunities shall be identified using the following:

Consider thinned stands, both present and future.

Consider unthinned well-stocked stands of good vigor.

Maximum age of stands treated is limited to age 80 and 10 years before final harvest is scheduled.

Consider repeated applications at 10 year intervals.

Give priority consideration to nutrient deficient sites.

Consider the application of 200 pounds per acre of nitrogen in urea form.

Genetics

The updated 1987 Western Oregon Tree Improvement Plan contains the framework for BLM's tree improvement strategy. The following planning criteria should be used to supplement this plan:

Plan to use improved seed currently available from superior parent trees as identified by progeny test data, and from clonal and seedling seed orchards when projecting improved seedling availability.

Future improved seed will generally be produced in two or more developmental phases. These phases can include improved clonal seed orchards and/or full-sib seedling seed orchards.

Plan to phase in reforestation with improved seedlings over time to replace conventional stock on those lands identified for improved stock.

Determine the level of genetic gain associated with the sources of improved seed by analyzing progeny test data, monitoring plots, or other pertinent information.

Project a phase in of the genetic gain over time, with priority given to planting the best stock on the highest quality sites. The genetic gain can be projected as an average for each master unit or can be specific for individual breeding units.

Adjusting Managed Stand Yield Simulations for Operational Fall Down

Yield simulations reflect gross yields of idealized stand conditions, therefore, the yields must be adjusted for field conditions such as those found in thinned plantations, forest inventory plots and actual plantations. Use the following adjustments:

An allowance for defect and breakage in thinnings and final harvest shall be made based on district experience in young timber.

Yield reductions for non-stocked openings in plantations should be developed by evaluating both the fixed radius portions of the 5-point inventory plots and stocking survey results.

Yields expected from fertilization should be reduced by 15 percent for application irregularities.

Impacts of root diseases such as *Phellinus* and black stain shall be recognized through species conversion or a yield reduction for the sustained yield unit.

Consider yield impacts resulting from long-term soil productivity loss.

For the operable land base described above display the nondeclining harvest level for the base program (site preparation, planting and protecting seedlings including the use of genetic stock and plantation release).

Display the allowable cut effect for the following silvicultural practices and discuss the impact on the harvest level resulting from the addition of each practice or combination of practices:

Plantation release
Precommercial thinning
Fertilization
Commercial thinning
Stand conversion

Discuss opportunity for increasing the availability of fuelwood for local areas.

Prepare a table displaying projected harvest by age class by decade. See Table 2-T-9.

Table 2-T-1 – Acres of Forest Lands by Ownership and County Within the Planning Area as of October 1, 1988

County Name	BLM	USFS	Other Public	Forest Industry	Other Private	Total
Total						

Table 2-T-2 – Volume of Growing Stock on Commercial Forest Land by County as of October 1, 1988

County Name	BLM	USFS	Other Public	Forest Industry	Other Private	Total
			Million Cubic Feet[1]			
Total						
			Million Board Feet[2]			
Total						

[1]Includes live trees of commercial species 7 inches DBH and larger to a variable top.

[2]Includes live trees of commercial species 7 inches DBH and larger to a variable top. Volumes converted to 16 foot Scribner Log Scale.

Table 2-T-3 – TPCC Summary (Acres)

	O&C	PD	CBWR	Total
Non-Forest				
Rockland				
Brush				
Grass				
Water				
Highway				
Utility				
Agriculture				
Subtotal				
Nonsuitable Woodland				
Fragile nonsuitable				
Suitable Woodland				
Low Site				
Noncommercial Species				
Cat. I - Reforestation Problem				
Cat. II - Reforestation Problem				
Suitable Commercial Forest Land				
Nonproblem				
Fragile suitable				
Cat. I - reforestation problem				
Cat. II - reforestation problem				
Combination reforestation problem and fragile				
Total				

Note: See Figure 1-1 for definitions.

Table 2-T-4 – Acres of BLM Land Included in Congressionally Designated Areas[1]

	Acres by TPCC Classification					
Name and Type of Designation	**Suitable Commercial Forest Land**	**Suitable Woodland**	**Nonsuitable Woodland**	**Nonforest**	**Land Status**	**Total**
Total						

[1]Areas where BLM does not have the ability to manage for timber production the lands under its jurisdiction. Includes Wilderness Study Areas, Wild and Scenic Rivers, County Parks established by an Act of Congress, etc.

Table 2-T-5 – Age Class Distribution on BLM Lands as of October 1, 1988 (Acres)

Age Class	O&C			Public Domain			CBWR			District Total		
	CFL	SWL	NSWL	CFL	SWL	NSWL	CFL	SWL	NSWL	CFL	SWL	NSWL
0												
10												
20												
30												
40												
180												
190												
200+												
Total												

CFL = Suitable Commercial Forest Land, SWL = Suitable Woodland, NSWL = Nonsuitable Woodland.

Table 2-T-6 – Age Class/Site Class Distribution on BLM Suitable Commercial Forest Land by Major Species as of October 1, 1988 (Acres)

Age Class	Site Class					
	I	II	III	IV	V	Total
0						
10						
20						
180						
190						
200+						
Total						

Note: Use MICRO*STORMS site classes for each dominant species on the District.

Site Class based on _____. (Identify the Site Table the District is using.)

Table 2-T-7 – Reforestation Classifications and Treatments Accomplished as of October 1, 1988

	Acres		
	CFL	SWL	Total
Understocked			
Unestablished			
Established			
Stocked			
Unestablished min.			
Unestablished target			
Established min.			
Established target			
PCT			
PCT and Fertilized			
Commercial Thinning			
Total			

CFL = Suitable Commercial Forest Land
SWL = Suitable Woodlands

Note: Use MICRO*STORMS. Display information separately for stands aged 0-5, 6-15, 16-25 and 26-35 years of age.

Table 2-T-8 – Acres of Stand Treatment Accomplishments by Age Class as of October 1, 1988

Age Class	Total Acres	Imp. Stock	PCT	Imp. Stock and PCT	PCT and Fert.	Imp. Stock and PCT Fert.	PCT and Fert. and CT	PCT and CT	CT
0									
10									
20									
30									
40									
50									
60									
70									
80+									

PCT = Precommercial Thinning
Fert. = Fertilization
CT = Commercial Thinning
Imp. Stock = Planted improved stock

Note: Use MICRO*STORMS.

Table 2-T-9 – Projected Harvest By Age Class By Decade for Highest Nondeclining Harvest Level

	Acres/Decade						
Age Class	**1**	**2**	**3**	**4**	**5**	**10**	**20**
30							
40							
50							
60							
70							
80							
90							
100							
200+							
Total							

Animals

Introduction

Prepare an introduction that discusses the following:

The Bureau's emphasis on habitat quantity, quality and distribution.

The reason for analyzing the needs of selected animal species in the AMS.

General relationships between habitat and animal populations and distribution.

Coordination with the Oregon Department of Fish Wildlife in development of the AMS.

Existing Conditions

Priority Habitats: For purposes of analysis, priority habitats on all forested lands include 1) early seral stage, 2) mid seral stage, 3) late seral stage, 4) mature, and 5) old growth. These five stages (see Glossary for separate definitions) are recognized stages of development within all major plant groupings (see Glossary). Other priority habitats include aquatic/riparian, ponds, lakes, wooded swamps, wet meadows, sand dunes, cliffs, grassy balds, talus slopes, dry land, hardwoods and shrubs, etc. (see the Vegetation and Water Resources sections). Snags and fallen trees are priority habitat components of forest seral stages.

Describe priority habitat characteristics. Include, for example, discussions on:

vegetation (canopy) layers
plant (especially tree shrub) species diversity
snags and fallen trees (describe abundance, distribution, sizes and stages of decay)
size of area
pool/riffle ratios, water temperatures, turbidity, etc.

Cross reference to Vegetation, Timber Resources, and Water Resources sections where quantification of the priority habitats is provided. Using amounts of nonforest and nonsuitable woodland identified in the Timber Resources section as a base, estimate the amount of unique and fragile habitat available within the district in the following habitats:

cliff
grassy bald
talus
sand dune
dryland hardwood
dryland shrub
wooded/forested swamp
wet meadow
other
Total

Estimate the total miles of 1st and 2nd order streams located entirely within the remaining mature and old-growth seral stages, or cross reference to data in the Water Resources section if directly comparable.

Summarize the beneficial and adverse impacts of land management activities on the distribution, condition and trend of priority wildlife habitats.

Summarize important ecological relationships between each priority habitat (and its specific components) with priority species and their needs for food, cover and water (see *Management of Wildlife and Fish Habitat in Forests of Western Oregon and Washington,* E.R. Brown, ed., 1985).

Priority Animal Species: At least 84 species of animals (see Table 2-A-1) qualify as "priority" based on the following criteria: 1) Federal threatened, endangered, and candidates; 2) state threatened and endangered; 3) additional taxa listed by the Oregon Natural Heritage Program; and 4) other species of high public interest. These include game animals (including fish), furbearers, raptors, great blue heron, and cavity users, especially primary cavity excavators (woodpeckers).

For purposes of the RMP, the following species will be discussed in detail due to high public interest in their status:

bald eagle
peregrine falcon
Columbian white-tailed deer
Federal candidate species (where applicable)
spotted owl
Roosevelt elk
black-tailed deer
coho salmon
chinook salmon
steelhead/rainbow trout
cutthroat trout

Describe and display available data on animal populations, distribution and important use areas of the above species. Include use areas such as:

nest and roost sites
activity centers/concentration areas, e.g., for food and cover
home ranges of individual animals (from telemetry)
spawning areas

Summarize life requirements of these species for food, reproduction and cover as described in the literature and determined from local inventory/monitoring data.

Summarize the beneficial and adverse impacts of land management activities on populations and distribution as described in the literature.

Current Management Direction

Describe district management decisions/actions designed to benefit priority wildlife habitat or priority species. Include constraints on other resource programs as well as habitat improvement projects. Discuss the effectiveness of management decisions designed to favor wildlife habitat or species under the current management plan, as determined from local monitoring.

Management Opportunities

Identify fish and wildlife management opportunities consistent with BLM and ODFW goals. As a minimum, identify opportunities to accomplish the following:

Meet habitat management requirements of Federal Recovery Plans.

Manage habitat to prevent federal listing of other species.

Manage aquatic and riparian habitats to enhance the characteristics of these unique areas.

Maintain or improve snag and downed log habitat to meet the life requirements of associated species.

Provide the habitat composition needed to meet, or exceed, ODFW management goals.

Maintain, or improve, nesting habitat for raptors and great blue heron.

Maintain, or improve, special habitat features such as ponds, wetlands, cliffs, grassy balds, talus slopes and other noncommercial forest lands. Maintain the full complement of all habitats in sufficient quantity, condition and distribution to meet the life requirements of all animals.

Work cooperatively with adjacent landowners to provide effective, long-term management of wildlife habitats for priority species, especially Federal threatened and endangered species.

Each opportunity identified must include 1) specific objectives, quantified to the extent possible, and related to specific habitat management areas where they can be implemented, and 2) management guidelines needed to meet specific objectives in each habitat management area.

Table 2-A-1 – Priority Animal Species (Western Oregon)

Common Name	Scientific Name	Reason
A. Fish		
coho salmon	*Oncorphynchus kisutch*	HI
chinook salmon	" *tschawytscha*	HI
cutthroat trout	*Salmo clarki*	HI
rainbow trout/ steelhead	" *qairdneri*	HI
Oregon Chub	*Hybopsis cramperi*	FC
Jenny Creek sucker	*Catostomus rimiculus*	FC
Lost River sucker	" *luxatus*	FC
Klamath largescale sucker	" *snyderi*	FC
shortnose sucker	*Chasmistes brevirostris*	FC
B. Amphibians		
California slender salamander	*Batrachoseps attenuatus*	OH
Oregon slender salamander	" *wrighti*	OH
DelNorte salamander	*Plethodon elongatus*	OH
Larch Mountain salamander	" *lavselli*	FC
Siskiyou Mountains salamander	" *stormi*	FC
red-legged frog	*Rana auora*	OH
foothill yellow-legged frog	" *boylei*	OH
cascade frog	" *cascadae*	OH
spotted frog	" *pretiosa*	ST
C. Reptiles		
painted turtle	*Chrysemys picta*	OH
western pond turtle	*Clemmys marmorata*	FC
racer	*Coluber constrictor*	OH
sharptail snake	*Contia tennis*	OH
common kingsnake	*Lampropeltis getulus*	OH
California mountain kingsnake	" *zonata*	OH
D. Birds		
great blue heron	*Ardea herodias*	HI
wood duck	*Aix sponsa*	HI
osprey	*Pandion haliaetus*	HI
bald eagle	*Haliaetus leucocephalus*	FT, ST
sharp-shinned hawk	*Accipiter striatus*	HI
Cooper's hawk	" *cooperii*	HI
northern goshawk	" *gentilis*	OH
red-tailed hawk	*Buteo jamaicensis*	HI
golden eagle	*Aquilla chrysaetos*	HI
American kestrel	*Falco sparverius*	HI
peregrine falcon	" *peregrinus*	FE
ruffed grouse	*Bonosa umbellus*	HI
wild turkey	*Meleagris gallopavo*	HI
mountain quail	*Oreorty pictus*	HI
red-legged partridge	*Alectoris rufa*	HI
western snowy plover	*Charadrius alexandrinus nivosus*	FC
marbled murrelet	*Brachyramphus marmoratus*	FC
band-tailed pigeon	*Columba fasciata*	HI
western screech owl	*Otus kennicotti*	HI
great horned owl	*Bubo virginianus*	HI
northern pygmy owl	*Glaucidium gnoma*	HI
burrowing owl	*Athene cunicularia*	OH
spotted owl	*Strix occidentalis*	ST
barred owl	" *varia*	HI
great gray owl	" *nebulosa*	HI
northern Saw-whet owl	*Aegolius acadicus*	HI
Lewis woodpecker	*Melanerpes lewis*	OH
acorn woodpecker	" *formicivorus*	HI
red-breasted sapsucker	*Sphyrapicus ruber*	HI
Williamson's sapsucker	" *thyroideus*	HI
downy woodpecker	*Picoides pubescens*	HI
hairy woodpecker	" *villosus*	HI
white-headed woodpecker	" *albolarvatus*	HI
northern flicker	*Colaptes auratus*	HI
pileated woodpecker	*Dryocopus pileatus*	OH
purple martin	*Progne subis*	OH
blue-gray gnatcatcher	*Polioptila caerulea*	OH
western bluebird	*Sialia mexicana*	OH
E. Mammals		
pallid bat	*Antrozous pallidus*	OH
fringed myotis	*Myotis thysanodes*	OH
Townsend's big-eared bat	*Plecotus townsendii townsendii*	FC
Brazilian free-tailed bat	*Todarida braziliersis*	OH
gray fox	*Urocyon cinereoargenteus*	HI
black bear	*Ursus americanus*	HI
ringtail	*Bassariscus astutus*	OH
raccoon	*Procyon lotor*	HI
river otter	*Lutra canadensis*	HI
marten	*Martes americana*	OH
fisher	" *pennanti*	OH
mink	*Mustela vison*	HI
mountain lion	*Felis concolor*	HI
bobcat	*Lynx rufus*	HI
elk	*Cervus elaphus*	HI
black-tailed deer	*Odocoileus hemionus*	HI
Columbian white-tailed deer	" *virginianus leucurus*	FE
gray squirrel	*Sciurus carolinensis*	HI
beaver	*Castor canadensis*	HI
white-footed vole	*Arborimus albipes*	FC
red-tree vole	" *longicaudus*	OH

Definition

FE = Federal Endangered
FT = Federal Threatened
FC = Federal Candidate
ST = State Threatened
OH = Oregon Natural Heritage listing
HI = High Public Interest

Cultural and Paleontological Resources

Introduction

Review cultural and paleontological resource inventory and management files for purposes of compiling and describing information. For purpose of the AMS, Native American traditional use and religious sites will be covered under cultural resources.

Prepare map of sites. (These maps will be used for analytical purposes only. Sites will not be displayed in public documents.)

Use the prepared text which follows (in quotation marks) or a similar text.

Existing Conditions and Current Management Direction (cultural resources)

> "Federal agencies are responsible for cultural resources on lands under their jurisdiction. Through a group of laws beginning with the Antiquities Act (1906), BLM has been mandated to identify, protect and enhance such resources on public lands. A number of procedures, including those specified in 36 CFR 800.4(a), have been used to identify cultural resources within the planning area."

Describe cultural resource survey work completed on BLM-administered land in the planning area, such as Class I surveys and clearance work for management activities.

> "The eligibility of some cultural resource sites for inclusion in the National Register of Historic Places has been assessed using criteria described in 36 CFR 60.6. (#) BLM sites in the planning area are listed in the National Register or have been determined eligible for inclusion."

> "Archeological Sites"

> "(#) prehistoric sites have been identified on BLM-administered land. There is considerable variation in the condition of these sites. Although some sites have been extensively disturbed, others are in excellent condition. Future surveys will result in the location of additional sites."

Describe prehistoric use of the planning area, recent (since1980) site protection and enhancement measures, such as data salvage, and sites listed in the National Register.

> "Historic Sites"

> "There are (#) inventoried historic sites on BLM-administered land. Of these, (#) are documented in historical records but remain unverified in the field. Although known historic sites have been subjected to varying amounts of deterioration, some remain in excellent condition and are suitable for restoration or rehabilitation."

Describe historic use of the planning area, recent (since1980) protection and enhancement measures, such as stabilization of structures, and sites listed in the National Register.

> "Native American Traditional Use and Religious Sites"

Describe sites which have been identified by Native American groups for traditional or religious uses and how these sites are currently managed.

Existing Conditions and Current Management Direction (paleontological resources)

Describe paleontological resource sites on BLM-administered land in the planning area.

> "All reports of fossil-bearing deposits are examined by qualified personnel to avoid destruction of those which may be important."

Management Opportunities (cultural, paleontological and Native American resource sites)

Describe protection and enhancement opportunities for the types of sites found on BLM-administered land.

Special Areas

Introduction

For purpose of data compilation, review: (1)special area information in the 1979-1983 management framework plans (MFP) or MFP amendments; (2) ACEC identification and screening reports; and (3) planning records, such as inventory data, public input files, Oregon Natural Heritage Data Base and *A Survey of the Potential Natural Landmarks, Biotic Themes, of the North Pacific Border Region,* William W. Chilcote, et al., 1976.

Map existing and potential special areas. A page-size map of these areas will be included in the AMS.

Use the prepared text which follows (in quotation marks) or a similar text.

Existing Conditions and Current Management Direction

"Special areas are currently identified for management on BLM-administered lands through various means, including: (1) designations such as Area of Critical Environmental Concern (ACEC), Research Natural Area (RNA) and Outstanding Natural Area (ONA); and (2) other MFP special area allocations such as botanical site and educational and scientific study area. These areas are described as in Table 2-SA-1 and mapped in Figure ."

Management Opportunities

"During the initial stages of the RMP process, the public and BLM employees were asked to identify public land areas that might meet ACEC criteria. The identified areas were screened by interdisciplinary teams (IDT) composed of BLM managers and staff. The screening involved examinations of area values, determinations of whether the values met the ACEC relevance and importance criteria (see Glossary - Potential ACEC), recommendations to the District Manager to accept or reject identified areas and a decision on the recommendations by the District Manager. The results of this process are displayed in Table 2-SA-2."

"Through experience in managing and monitoring designated ACECs for the past several years, some possible modifications in current management guidance have been identified, and are shown in Table 2-SA-3."

"Special areas identified for possible management through other than ACEC designation, for example RMP land allocation without special designation, are displayed in Table 2-SA-4."

Table 2-SA-1 – Currently Managed Special Areas (example)

Site Name	Approx. Size (acres)	Description[1]	Current Management
Williams Lake (Clackamas Co.)	90	Fine example of bog/ quaking bog succession; unique plant community.	Designated ACEC Approved site-specific management plan. Primary zone protected from surface-disturbing activities. Caution zone provides for salvage logging, recreation use.
Baty Butte-Silver King Botanical Sites (Clackamas Co.)	40	*Aster gormanii* sites; special interest, Federal Category 2 plants.	MFP allocation. Protected from surface disturbing activities. Monitored annually since 1983.

[1]See USDI, BLM 1981, Eastside Salem MFP and site-specific management plans for more detailed descriptions.

Note: Other types of information which could be listed under "Current Management" are TPCC, mineral lease stipulations and ORV designations.

Table 2-SA-2 – Results of ACEC Identification and Screening Process (example)

Site Name	Approx. Size (acres)	Description[1]	Screening Results/Rationale
Alsea Bay Island (Lincoln Co.)	XX	Undisturbed island in the Alsea Bay estuary.	Not selected as potential ACEC. Does not meet relevance criteria.
Wilhoit Springs (Clackamas Co.)	XX	Low elevation, older forest ecosystem; historical use.	Selected as a potential ACEC.
Parker Creek (Benton Co.)	XX	Undisturbed and important anadromous fish stream.	Proposal retracted.

[1]See information prepared for identification and screening reports in District files (file code 1610).

Table 2-SA-3 – Possible ACEC Modifications

Site Name	Size (acres)	Description	Possible Modifications/Rationale
Eagle Rock (Coast Co.)	100	Bald eagle nesting area.	Move the ACEC boundary to cover a recently occupied nest tree.

Table 2-SA-4 – Potential BLM-administered Special Areas Other than ACECs (example)

Site Name	Approx. Size (acres)	Description	Current Management
Dwyer Corridor	XX	Older timber on Mt. Hood Highway.	Not available for planned timber harvest. Some local interest in formally designating and protecting the area.

Recreation

Introduction

Review recreation management files and resource inventory, including Recreation Opportunity Spectrum (ROS) classifications if available, for purposes of compiling and describing information.

Use the most current Recreation Management Information System (RMIS) report for annual visits.

Use the State Comprehensive Outdoor Recreation Plan (SCORP) as a basis for describing other similar recreation opportunities and regional recreation demand. U.S. Forest Service and county land use plans may also be useful in this analysis.

Map recreation sites, areas and trails. A page-size map of these features will be included in the AMS.

Use the prepared text which follows (in quotation marks) or a similar text.

Existing Conditions

Discuss recreation opportunities on BLM-administered land in the planning area, in the following categories:

Major activities
Use concentration areas
Existing recreation opportunities (total for BLM in the planning area)
- number of developed recreation sites
- miles of recreation trail
- miles of streams and rivers
- other opportunities as appropriate

ROS classification of lands if data are available (tabulate and/or map).
Reference to specific location of detailed recreation inventory data.

Discuss general availability of similar opportunities on other lands.

Discuss BLM recreation management areas.

"BLM Recreation Mangement Areas"

"All BLM-administered land falls into two recreation management classes – Special Recreation Management Areas (SRMA) and Extensive Recreation Management Areas (ERMA). These areas are described in the sections to follow and mapped in Figure ."

"Special Recreation Management Areas"

"A relatively small proportion of the public lands are managed as SRMAs. Major investments in recreation facilities and visitor assistance are appropriate in SRMAs when required to meet management objectives. Primary management objectives are providing recreation opportunities that would not otherwise be available to the public; reducing conflict among users; minimizing damage to resources; and reducing visitor health and safety problems."

"Existing SRMAs in the planning area are described in Table 2-R-1."

Table2-R-1 – Existing Special Recreation Management Areas (example)

Name	Acres	Annual Visits	Amenities and Other Data
Fishermen's Bend Recreation Site (Marion Co.)	200	34,000	Located on N. Fk. Santiam River. Access via State Highway 22. BLM Recreation Facilities: 40 camping units 42 day use units 1 boat ramp Major activities – camping, picnicking, fishing. ORV designation – limited.

"Extensive Recreation Management Areas"

"A vast majority of the public lands are managed as ERMAs. In these areas management actions to facilitate recreation opportunities are limited primarily to providing basic information and access. People visiting ERMAs are expected to rely heavily on their own equipment, knowledge and skills while participating in recreation activities."

"Existing ERMAs in the planning area are described in Table 2-R-2."

Table 2-R-2 – Existing Extensive Recreation Management Areas (example)

Name	Acres	Annual Visits	Amenities and Other Data
Santiam Resource Area (Marion and Linn Cos.)	88,000	225,000	Located in mountainous forest lands east of Salem, Oregon. Access via State Highway 22 and U.S. Highway 20. BLM recreation facilities – forest roads, 5 miles of hiking trail, 4 developed sites (45 camping units, 28 day use units). Major activities – hunting, driving for pleasure. ORV designations – open with few exceptions.

Current Management Direction

Summarize current management direction for existing SRMAs, such as extent of maintenance and operations.

Summarize current management direction for existing ERMAs (consolidate if description becomes repetitious).

Demand

Describe regional recreation demands and needs and the general role BLM could play in meeting identified needs. Consult SCORP and BLM recreation policy in describing BLM's role.

Management Opportunities

"Special Recreation Management Areas"

"Opportunities to significantly increase and/or enhance recreation use of existing SRMAs during the 1990s are shown in Table2-R-3."

Table 2-R-3 – Existing SRMA Enhancement Opportunities (example)

Name	Enhancement Opportunities
Fishermen's Bend Recreation Site (Marion Co.)	Expand day use facilities by 50 units. Build an interpretive trail.

Summarize current management issues in potential SRMAs (e.g., Green Peter Peninsula provides habitat for sensitive wildlife species. Any development of the peninsula will need to recognize the habitat needs of these species.)

"Potential SRMAs in the planning area are described in Table2-R-4."

Table 2-R-4 – Potential Special Recreation Management Areas (example)

Name	Acres	Annual Visits	Amenities and Other Data
Green Peter Peninsula (Linn Co.)	400	100	Forested peninsula on east side of Green Peter Reservoir. Good developable area for multiple recreation uses, including camping, picnicking, boating, fishing and hiking. Current land use allocation – recreation.

"Opportunities to provide for recreation use of potential SRMAs during the1990s are shown in Table 2-R-5."

Table 2-R-5 – Potential SRMA Enhancement Opportunities (example)

Name	Enhancement Opportunities
Green Peter Peninsula (Linn Co.)	Build a recreation access road to the west end of the peninsula. Build a recreation site with a boat ramp at the end of the road.

"Opportunities to increase and/or enhance recreation use of existing ERMAs during the 1990s are shown in Table2-R-6."

Table 2-R-6 – Existing ERMA Enhancement Opportunities (example)

Name	Enhancement Opportunities
Santiam Resource Area (Marion and Linn Cos.)	Close roads in the XYZ area to provide a walk-in elk hunting area. Expand ABC Recreation Site by 25 day use units. Maintain the BLM segment of the MNO trail.

If potential ERMAs are contemplated, prepare a section that is similar to the potential SRMA section.

Visual Resources

Introduction

Review visual resource inventory and management files for purposes of compiling and describing information.

Map Visual Resource Management (VRM) classes as inventoried. A page-size map of VRM classes will be included in the AMS.

Use the prepared text which follows (in quotation marks) or a similar text.

Existing Conditions

"Visual resources are the land, water, vegetation, structures and other features (as described in this AMS) that make up the scenery of public lands. So that visual resource (scenic) values can be considered when planning management activities, public lands are classified according to their relative worth from a visual resource management (VRM) point of view. There are four VRM classes which are established using scenic quality, sensitivity level and distance zone criteria (see Glossary). Management objectives for each class are designed to mitigate, and in some cases avoid, the adverse effect of management activities on scenic values."

"The VRM classes, objectives and general class standards are:"

"Class I (highest level of protection). Provides primarily for natural ecological change and preservation of scenic quality. This class generally includes areas with very high scenic qualities and/or sensitivity levels and is reserved for Congressionally designated areas or other scenic/sensitive public lands unavailable for timber harvest."

"Class II. Landscape alterations caused by management activities may be seen but should not attract attention, and scenic quality should be retained. This class generally includes areas with high to moderate scenic qualities and high sensitivity levels. The level of change to the characteristic landscape should be slight."

"Class III. Landscape alterations may attract attention but should not dominate the view, and scenic quality should be partially retained. This class generally includes areas with moderate to low scenic qualities and high to medium sensitivity levels. The level of change to the characteristic landscape should be moderate."

"Class IV (lowest level of protection). Landscape alterations may dominate the view and may be the major focus of viewer attention. Scenic quality may be modified. This class generally includes areas with low scenic qualities and medium to low sensitivity levels. The level of change to the characteristic landscape can be high."

"Figure shows VRM classes derived from an inventory and evaluation of the visual resources on BLM-administered land. Acreages, percentages of the land base and representative areas in each class are listed in Table 2-VRM-1. Detailed information regarding this inventory and evaluation may be reviewed in Resource Area or District recreation files."

Table 2-VRM-1 – Visual Resources

VRM Class	Acres	Percentage of the BLM Land Base	Representative BLM Areas
I			
II			
III			
IV			

Current Management Direction

Summarize current management direction for meeting VRM objectives.

Management Opportunities

Identify significant opportunities for maintaining or improving scenic quality during the 1990s.

Wild and Scenic Rivers

Introduction

Consult the National Wild and Scenic Rivers Act of 1968 and any other relevant legislation, to determine which designated rivers are in the planning area.

Consult the National Park Service "Nationwide Rivers Inventory" (NRI) to determine which NRI-listed rivers are in the planning area.

Review recreation resource inventory and management files to compile information on designated, NRI-listed and other potential rivers, including those in bills introduced in Congress and those in the State Scenic Rivers initiative if it is passed by the voters.

Map designated, NRI-listed and other potential rivers. A page-size map of these rivers will be included in the AMS.

Use the prepared text which follows (in quotation marks) or a similar text.

Existing Conditions and Current Management Direction

"As a federal land management agency, BLM is an active participant in managing designated Wild, Scenic and Recreation Rivers and in contributing to the eligibility/classification/suitability studies of rivers listed in the Nationwide Rivers Inventory (NRI) and other potential rivers. Other potential rivers are those identified by Congressional bills, BLM or the public which might meet the qualifications for wild, scenic or recreation river designation but which have not been formally considered. Designated, listed and potential rivers are described in the sections to follow and are mapped in Figure ."

"Designated rivers in the planning area are described in Table 2-WS-1."

Table 2-WS-1 – Designated Wild, Scenic and Recreation Rivers (example)

Name of River	Total River Miles	BLM River Miles	Current BLM Management
Oregon	40	20	1/4-mile on either side of river protected from most surface-disturbing activities. Developed facilities – 50 camping units 50 day use units 2 boat ramps 20 miles of trail River floating activities regulated by permit.

Management Opportunities

"NRI-listed and other potential rivers in the planning area are described in Table 2-WS-2."

Table 2-WS-2 – NRI-listed and Other Potential Rivers (example)

Name of River	Total River Miles	BLM River Miles	Current BLM Management
Coast (NRI-listed)	25	10	Riparian protection zone averaging150 feet on both sides of river. Fisherman access trail maintained by volunteers.
Cascade (NRI-listed)	40	5	This river dropped from the NRI due to imminent construction of a water storage facility.

Discuss which of the NRI-listed and other potential rivers should be included in a Bureau-initiated river study process.

Discuss which of the NRI-listed and other potential rivers should be included in a joint river study process initiated either by BLM or by another Federal or state agency.

Studies will be conducted, or proposed for joint study with another agency, for any NRI-listed or other potential river with a five mile or greater river length or river segment where BLM-administered lands comprise 40 percent or more of the total shoreline or 40 percent or more of adjacent lands within 1/4-mile of each side of the river. Discuss which NRI-listed rivers should be dropped from further study and why.

Wilderness

Introduction

Review wilderness inventory and management files for purposes of compiling and describing information.

Map designated wilderness areas, wilderness study areas and instant study areas. A page-size map in the AMS will show these areas.

Acres will be derived from official acre counts.

Use the prepared text which follows (in quotation marks) or a similar text.

Existing Conditions and Current Management Direction

"Congressional legislation created one wilderness area in the planning area. The Wilderness Area, which encompasses acres of BLM-administered land, is mapped in Figure . It is currently managed under a wilderness management plan, which was finalized and implemented in . BLM-administered lands adjacent to the wilderness area are managed for multiple use."

Management Opportunities

"BLM has identified and inventoried (#) public land areas having wilderness characteristics and values. These wilderness study areas and instant study areas are mapped in Figure and are described in Table 2-W-1."

Table 2-W-1 – Wilderness Study Areas and Instant Study Areas (example)

Name of Area	BLM Acreage	Non-BLM Acreage	Current Management
Coast	5,500	500	Interim management which allows existing uses to continue but does not allow new uses until a final determination is made.
Cascade	6,000	0	Area not recommended for wilderness designation due to substantial alteration of the natural environment. Interim management until final determination.

Minerals

Introduction

Provide an overview of the minerals activity in the district.

Existing Conditions

Describe the history and current status of mineral exploration, development and production activity. Provide data on the number of mining claims and leases. Refer to any maps which are available for showing mines, mining claims, rock pits, well sites, etc. Provide a short overview on the development of rock quarries in support of the timber sale program, including an estimate of the number of cubic yards of rock produced annually.

Use a table to show acres of mineral potential and list the minerals most likely to occur. Describe any areas likely to be explored within the next few years. Describe any Areas of Critical Mineral Potential (ACMP) including acreage figures. Discuss the known or possible presence of strategic and critical minerals. Describe any restrictions to mineral exploration development and production. Refer to the Lands discussion for withdrawal information and acreages.

Current Management Direction

Provide an overview of the management policies for locatable, leasable, and salable minerals.

Management Opportunities

Discuss any opportunities to conserve mineral resources and to minimize conflicts with other resources.

Lands & Rights-of-Way

Introduction (Lands)

The Introduction and Table 2-T-1 of the Timber Resources section of the AMS provide a general overview of the acreage of public land in each district. An ownership map should be included in the Introduction to the AMS.

Existing Conditions (Lands)

Describe the ownership of other major landowners, the ownership pattern of the BLM-administered lands and any management complication created by the ownership pattern.

Identify in a narrative or Table 2-L-1 the location and purposes of land use authorizations such as major leases (Recreation and Public Purposes, small tract, etc.) and land use permits.

Table 2-L-1 – Land Use Authorizations (example)

Location	Type of Authorization	Purpose
T. __ S., R. __ W.__ Section ___ : ___ ___ Acres	R&PP	Boy Scout Camp
"	Small Tract	Home Site

Where appropriate include in the narrative a discussion of the extent of unauthorized occupancy and unauthorized use, e.g., agricultural.

Summarize in a narrative or Table 2-L-2 the existing withdrawals and withdrawal applications by type and list the segregative effect.

Table 2-L-2 – Existing (E) and Withdrawal Applications (A) (example)

Type	Acreage by Type	Segregative Effect
Powersite (E)	2000	Withdrawn from Operation of General Land Laws
Administrative Sites (A)	500	Withdrawn fromOperation of General Land Laws and Mineral Entry

Show in Table 2-L-3 or in narrative format the amount of land transferred out of public ownership under the guidelines of the existing MFP.

Table 2-L-3 – Land Ownership Adjustments

Year	Type of Transfer	Acreage

Management Opportunities (Lands)

List acres which have been identified in current operating Management Framework Plans for disposal if such action is still considered appropriate. Also describe areas where acquisition is being considered. Identify the disposal and acquisition methods intended, e.g., sale, exchange, Land and Water Conservation Funds.

Describe opportunities for improving the land ownership pattern, resolving trespass and issuing land use authorizations.

The existing withdrawal review process and schedule are in place. There is a pending court case which in part will determine the future direction of withdrawal reviews. Therefore no opportunities for reviewing withdrawals need be discussed.

Rights-of-Way

Summarize the location, width and type of existing and proposed rights-of-way corridors (utilize the Western Regional Corridor Study as an information source). Include a map showing major right-of-way corridor locations.

Summarize Federal Energy Regulatory Commission applications that would require rights-of-way from BLM.

Summarize the existing exclusion and avoidance areas if any are identified in approved MFP's.

Describe or list in Table 2-L-4 the location of existing communication sites.

Table 2-L-4 – Existing Communication Sites

Site Name	Location	Right-of-Way No.	Name of Grantee

Identify sites where new or additional communication facilities could be placed as identified in the MFP or relevant sources.

Roads

Introduction

Discuss the need for and use of roads in the district relative to timber, recreation, wildlife, minerals, etc.

Existing Conditions

Using narrative and tables, describe the current inventory of roads, existing or committed (under contract) as of October 1, 1988, by road standard (single lane, double lane), surfacing, functional classification (collector, arterial, local) in terms of mileage. Include miles of road constructed each year. Discuss major stream crossings (over 35 sq. ft. end area culverts, bridges) by number and size where appropriate. Display Tables 2-RO-1, 2-RO-2, 2-RO-3.

Current Management Direction

Discuss present district policy on road management, maintenance, and construction standards. Refer to the RMO (Road Management Objectives) program, and District Road Management Handbooks, where available. Address road closure policies, both formal and informal. Also refer to the Minerals section for a discussion of rock quarries for road surfacing. Included are the number of developed quarries, cubic yards used annually for road construction and maintenance, and the approximate value and estimated number of new quarries to be developed for the decadal plan.

Management Opportunities

Discuss projected total miles of new road to be constructed to complete the entire road network based on the land use allocations in the current MFP. Comment on conflicts that roads create (visual, wildlife, soils, watershed). Discuss ways to restore areas to original condition using methods such as closures or seeding.

Table 2-RO-1 – Current Road Inventory

Surface Type	Current Miles Functional Classification[1]			Standard	
	Arterial	Collector	Local	Single Lane	Double Lane
Natural Surface					
Pit Run Surface					
Grid Rolled Rock					
Screened Base Course					
Aggregate Base Course-crushed					
Aggregate Surface Course-crushed					
Bituminous Surface Treatment					
Crushed Sand Stone					

[1]Functional classifications are defined as follows: (Federal Highway Administration Manual - Highway Functional Classification Concepts, Criteria and Procedures).

Arterial Roads – These provide service to large land areas, and usually connect with public highways or other arterial roads to form an integrated network of primary travel routes. The location and standard are often determined by a demand for maximum mobility and travel efficiency rather than specific resource management service. They are usually developed and operated for long-term land- and resource-management purposes and constant service.

Collector Roads – These serve smaller land areas and are usually connected to an arterial or public highway. They collect traffic from local roads or *terminal facilities. The location and standard are influenced by long-term multi-resource service needs, as well as by travel efficiency. Collector roads may be operated for either constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.

Local Roads – These roads connect terminal facilities with collector or arterial roads, or public highways. The location and standard are usually determined by the need to serve a specific resource activity or project, rather than travel efficiency. Local roads may be developed and operated for either long- or short-term service.

A terminal facility is usually a site at the end of a road or adjacent to a road, such as: trailheads, landings, viewpoints, wayside stops, parking spurs, or comfort stations. The access to terminal facilities is usually less than 0.1 miles in length and is considered an integral part of the parent road. Terminal facilities are found on all three road classifications.

Note: If the district does not use these classifications as part of a road management plan, substitute the information contained in the Western Oregon Computer Road Improvement System.

Table 2-RO-2 – Annual Road Construction from 1981 to 1988

Year	Miles of Construction
1981	
1988	

Table 2-RO-3 – Existing Major Stream Crossings

Type	Number
Culverts over 35 sq. ft. end area	
Bridge	
Wood	
Concrete	
Steel	
Low Water Crossing	

Access

Introduction

Discuss the need for legal access to the public lands. Include comments on easements and agreements relative to the checkerboard ownership.

Existing Conditions

Using narrative and Table 2-AC-1, describe the type of access available to BLM and the public. Include the number of acres of BLM-administered lands that are: 1) legally accessible to the public; 2) not legally accessible to the public. A separate breakout of lands within the checkerboard ownership pattern accessed by BLM under right-of-way agreements which are normally open to the public, but which could be closed by the grantor, may be useful.

Table 2-AC-1 – Road Access

BLM administered lands legally accessible[1] to public acres.
BLM administered lands not legally accessible to public[2] acres.
Easements obtained to date (number)
Permanent exclusive
Permanent nonexclusive
Estimated future easement acquisitions (1990s)
Permanent exclusive
Permanent nonexclusive

[1]For the purpose of this analysis, legally accessible refers to lands managed by the BLM which the public can enter by using roads, trails, etc., over which legal access rights for the public are available. For example, a parcel of BLM land which touches a county road is legally accessible and provides access to any contiguous BLM lands which can be walked to without crossing private lands.

[2]Separate breakout of lands within the checkerboard pattern accessed by BLM under right-of-way agreements, which are normally open to the public, but which could be closed by the grantor, may be useful.

Current Management Direction

Discuss present district policy for identifying needed legal access to public lands for all resource programs. How is the need for legal access and the type of access determined? If there are no additional District guidelines beyond the Manual, so state.

Management Opportunities

Explain by narrative and summarize in Table 2-AC-1 the probable number and types of easements still to be acquired to carry out the current management direction for all resource programs. Comment on existing access rights which are no longer needed, if any. Show a map of BLM-administered lands currently without legal access.

Fire

Introduction (Wildfire)

Use the following prepared discussion of fire hazard and risk and their relationship to fire regime:

> Fire Regime is defined as "the occurrence of wildfire characterized by the fire type, intensity, size and frequency" (Heinselman 1978). The natural fire regime has played an integral part in shaping the existing forest environment in the Pacific Northwest (Agee 1981). The fire regime for a particular forest is dependent, in part, upon the fire environment which exists within the forest. The fire environment consists of the existing vegetation, the dead and down woody materials, topography, and climate (Countryman 1972).
>
> Native Americans, and more recently following European settlement, modern man, have altered the vegetative component of this fire environment to varying degrees. Native Americans used fire to facilitate hunting, maintain lowland prairie, and encourage the growth of berries (Fahnestock and Agee 1983). Modern man has used fire for wildfire hazard reduction, planting site preparation, wildlife habitat improvement, insect and disease control, and other beneficial purposes (Chandler et al. 1983, Wright and Bailey 1982). Modern man has also modified the fire environment with intensive forest management activities, and with wildfire suppression policies and practices.
>
> Another factor which directly affects the fire regime is the ignition source. Although the fire environment may dictate the fire type, intensity, and ultimately the fire size, fire frequency is more closely tied to the fire ignition source. Lightning and human-caused activity are the two dominant ignition sources on BLM-administered lands (USDI-BLM 1986).

Two concepts have been developed by fire management specialists by which wildfire occurrence can be better predicted and modified. The first concept is fire hazard, defined as "A fuel complex, defined by volume, type condition, arrangement, and location, that determines the degree both of ease of ignition and of fire suppression difficulty" (Chandler et al. 1983). A fuel complex consists of living vegetation and any dead or down materials within the area. By altering the fuel complex, such as changing the amount and spatial arrangement of the fuels, or by changing the species of vegetation within the complex, fire hazard can be significantly altered.

A second concept used in predicting and altering the wildfire regime is fire risk. Fire risk is defined as "The chance of fire starting as affected by the nature and incidence of causative agencies" (Chandler et al. 1983). Fire risk is therefore directly related to the existing or potential ignition sources within the forest. The degree of risk can be altered by management programs such as activity regulations, road closures and forest closures.

Of all the components which affect the fire regime within a forest, only vegetation and human caused ignition sources can be practically controlled or manipulated by management. When forest management programs combine both hazard and risk reduction techniques, such as those activities outlined above, wildfire occurrence, size and intensity can be significantly reduced.

Discuss the decision constraints including adjacent lands and structures, and budgeting constraints.

Existing Conditions (Wildfire)

Discuss values at risk, including values associated with timber, water quality, sensitive soils, threatened or endangered species, and wilderness. (Reference other AMS sections as appropriate.)

Discuss the natural fire regime (fire type, intensity, size, and frequency) and existing fire environments within the planning area. Display Table 2-F-1.

Table 2-F-1 – Summary of Acreages Burned in Planning Area by Wildfire from 1980 to 1988

Year	Lightning Caused	Human Caused
Bureau Lands:		
1980		
1988		
Totals		
Other Lands:		
1980		
1988		
Totals		

Discuss the impact of past management activities upon fire hazard including past fire suppression activities. Include discussions concerning the extent to which prescribed fire has been used to alter fire hazard.

Discuss past management activities implemented to reduce fire risk such as restrictions and closures.

Discuss the impact of past fire suppression activities on resources. Include a description of mitigation and rehabilitation of suppression activities.

Current Management Direction (Wildfire)

Use the following prepared discussion:

Prior to 1988, protection from wildfire on the District was provided by the Oregon State Department of Forestry (OSDF) to ensure that minimum Federal standards for resource protection and safety are used to protect BLM resources from wildfire. The western Oregon protection contract is administered by a BLM contracting officer in the BLM state office; however, a BLM district contracting officer's representative will locally administer the protection contract. Under terms of the contract, OSDF will make initial attack on wildfires; BLM and other federal fire fighting resources will be available to OSDF to supplement initial and extended attack. BLM is responsible for operational (residue reduction) fires.

The goal of fire management is to control wildfires at the least suppression cost plus the most beneficial net change in resource value (total cost = suppression cost + net value change), including the cost of emergency rehabilitation after fire. Therefore, depending on values at risk (soil, air quality, timber, fisheries, etc.), various suppression tactics may be used to minimize resource damage. Tactics may exclude the use of bulldozers on fragile soils, ponding of important streams, soil disturbance near archaeological sites, backfiring near habitats of threatened or endangered plants, etc.

Conversely, certain areas such as developed recreation areas, new plantations, or advanced regeneration sites have very high resource value which may dictate the use of air tankers and other expensive suppression tactics for maximum protection.

Emergency fire rehabilitation is frequently necessary following large, severe wildfires to prevent further site degradation and to restore the burned area to full productivity. Rehabilitation is used to remedy adverse conditions caused by both the wildfire and the suppression tactics. Rehabilitation often includes restoration and seeding of bulldozer lines, salvage of damaged or killed timber, clearing ponded streams, etc.

Display and discuss current fire suppression levels and identify corresponding areas. Identify special suppression areas such as wilderness, Research Natural Areas, Areas of Critical Environmental Concern, Wilderness Study Areas, and Wild and Scenic River corridors.

Discuss district fire management plan objectives. Discuss current management techniques that reduce the probability of wildfire occurrence.

Summarize the adjacent landowner fire hazard situation and fire suppression policies.

Management Opportunities (Wildfire)

Discuss opportunities for reducing wildfire hazard and risk.

Introduction (Prescribed Fire)

Discuss any constraints that could affect decisions on prescribed burning. Consider such factors as smoke management policies, adjacent lands and structures, and budget. Describe the past uses and value of prescribed burning. Include acreage burned for timber management. Display Table 2-F-2. Cross-reference to other sources.

Table 2-F-2 – Summary of Acreages Burned in BLM Planning Area by Prescribed Fire from 1980 to 1988

Year	Logging Slash Disposal/Brush Control	Hazard Reduction	Wildlife Habitat Improvement	Total
1980				
1988				
Totals				

Current Management Direction (Prescribed Fire)

Discuss present District prescribed fire policy and programs, including monitoring. Cover site preparation (slash burning), hazard reduction, wildlife habitat improvement, and watershed improvement (water release). Where applicable, cross reference to the Air Resources discussion of prescribed burn acres.

Management Opportunities (Prescribed Fire)

Discuss acreages where prescribed fire could be used to enhance other programs and resources. Describe possible risks and benefits. Refer to specific maps or tables prepared elsewhere for other resource values. Comment on limiting factors such as the checkerboard land pattern, soil types, air quality and smoke management (refer to Air Resources section). Opportunities for the use of fire in other resource programs may be included in each individual resource analysis. Review other sections and cross reference as needed.

References

Agee, James K. 1981. Fire effects on Pacific Northwest forests: flora, fuels, and fauna. Northwest Fire Council Conf. Proc. p. 54-66.

Chandler, Craig, Phillip Cheney, Philip Thomas, Louis Trabaud, and Dave Williams. 1983. Fire in Forestry, Volume II: Forest fire management and organization. John Wiley and Sons, New York.

Countryman, Clive M. 1972. The fire environment concept. USDA Forest Service, Pacific Southwest Research Station, Berkeley.

Heinsellman, Miron L. 1981. Fire intensity and frequency as factors in the distribution and structure of northern ecosystems. In: Fire Regimes and Ecosystem Properties. USDA Forest Service, General Technical Report WO-26. p. 7-57.

USDI-BLM. 1986. Public land statistics. Bureau of Land Management, Washington, D.C.

Wright, Henry A., and Arthur W. Bailey. 1982. Fire ecology: United States and southern Canada. John Wiley and Sons, New York.

Socioeconomic Conditions

Existing Conditions

Population: Display population for the State and counties and for incorporated places within the district. Show data for 1987, 1980, 1970 and 1960. The data source will be the Population Research Center, Portland State University. Show projections of future population by county for 1995 and 2000 from the same source.

Employment: Display employment for State and counties in the planning area. Show data for 1988 (or most recent year possible), 1980, 1970 and 1960. Show an average of 1984 to 1987 and projections for 1995 and 2000.

Show employment data in the Oregon Economic Forecast prepared for the Executive Department, State of Oregon, for the following sectors:

Total NonagricultureEmployment

Nonmanufacturing Employment
- Construction
- Mining
- Transportation, Communication and Utilities
- Trade
- Finance, Insurance and Real Estate
- Service
- Government

Manufacturing
- Lumber and Wood Products
- Paper and Allied Product
- Other Manufacturing

Personal Income: Display personal income for the same geographic areas, sectors and years as the employment data. Again, data will come from the Oregon Economic Forecast. The relationship of BLM resource use and local personal income and employment will be shown by the use of an IMPLAN input-output model of the planning area's economy.

Timber Supply: Display the volume of wood harvested from major ownership categories in western Oregon and in each of the counties in the district, as an average for each year available in the base period 1984 to 1988. In addition, show the total harvested in the counties in the district for each year available from 1980 to 1988. The data source will be the annual reports from the Oregon Department of Forestry. Convert this data from Scribner long log to Scribner short log basis to be compatible with other BLM data.

Present Value of Existing Management: Estimate the present value of the existing BLM timber program. This assessment will involve only cash flows for the timber program; non-market values will not be included. Real interest rates of four percent and seven percent will be used to show sensitivity to interest rate. A real increase of timber prices of one percent will be used to show the effect of price changes. The base price will be the average stumpage price received by BLM for timber harvested in the period 1984 to 1988. This price will be the result of dividing value of timber sales by the total quantity sold for the planning area.

Economic Efficiency of Intensive Forestry Practices: Analyze the economic efficiency of intensive forestry practices using real interest rates of four and seven percent. Since the "allowable cut effect" is a major contributor to the economic efficiency of these practices, the value of the allowable cut effect will be included.

Use the SPS and/or Organon growth simulator models to simulate growth of the stand and provide a present value through the current harvest. The practices to be simulated include precommercial thinning, fertilization, commercial thinning and stand conversion. The efficiency criterion will be the contribution to net present value through the final harvest of the current stand, including the cost of restocking following harvest. A variable rotation age will be used.

Discuss results in a narrative and tables showing per-acre costs of the practice by year, contribution to net present value on site, value of allowable cut effect for each acre treated, and total net present value effect through final harvest. Other site-specific factors such as site index, yarding distance, and spacing and age of stand treated may also be displayed. Each sustained yield unit will be analyzed separately to take into account the particular age structure of each unit.

Effect of Hunting, Fishing and Other Recreation: Estimate the contribution of hunting, sport fishing and other recreation to the economy of the planning area, based on spending by hunters and fishermen who live outside the planning area and visit BLM-administered lands. Spending counted will be purchases of locally produced goods and services. The amount of spending will be based on data reported in the most recent U.S. Fish and Wildlife Service/Bureau of the Census *National Survey of Fishing, Hunting and Wildlife-Associated Recreation – Oregon.* The 1977 BLM Oregon State Office report on economic contributions by wildlife users will be updated to represent 1987 estimates. Estimate the total effect of such spending by using IMPLAN input-output model for the planning area.

Sport and commercial fishing outside of each planning area is partially dependent upon BLM land. Show the estimated value of dependent commercial fishing and sport fishing harvest for fishing both inside and outside the planning area. The value of commercial fishing will be the personal income generated per pound of fish landed. Estimate sport-fishing effects based on local spending by non-resident anglers.

Community Stability: Address community stability quantitatively through estimates of contribution of BLM resource production and use to employment and personal income in county-level economies. Include the effects of hunting and fishing, other recreation, timber activities, and revenue sharing. The planning area and each county in it will be represented.

Discuss recent (1980-1987) and anticipated (1990-2000) change in these economies. Future trends will be derived from the Oregon Economic Forecast. Communities and sub-county areas most sensitive to BLM management due to dependence on BLM lands will be identified. To a large extent, identification of local dependencies will rely on knowledge of BLM resource area managers and staff.

Revenue Sharing with Counties: Show the 1984 to 1988 average revenue distribution from the district harvest of timber for each O&C county. This will be compared to each county's estimated average total revenues for the same period.

Demand

Demand for Timber: Discuss future demand for BLM timber. Sensitivity to factors such as price and other sources of supply will be based on analysis using the Local Market Model which is being developed at the PNW Research Station, USFS.

The potential for increasing price premiums for "quality" wood will be analyzed using data from private land inventories, National Forest plans, supply studies for other regions and studies of the pattern of prices for different grades of lumber in the Pacific Northwest. Discuss this potential in a narrative.

Management Opportunities

Regional Economic Development Strategy: Summarize the Regional Economic Development Strategy for areas to be affected by the RMP. Emphasize those aspects of the strategy most likely to be affected. Identify ways to aid the strategy.

Chapter 3: Guidance for Analytical Techniques Needed To Estimate Effects of Alternatives

Reviewer's Guide

Estimation of effects of the alternatives provides information for the discussions of "environmental consequences" in the environmental impact statement (EIS) that accompanies each draft plan and later, each proposed plan. This analytical step occurs after alternatives are developed. The proposed guidance is intended to provide common techniques for addressing complex or sensitive issues or concerns shared by most districts. It is not intended to guide analysis of every environmental effect that may be addressed in each environmental impact statement. Analysis of effects on threatened and endangered species and effects on vegetation are examples of topics for which analytical techniques are considered fairly simple and straightforward, so structured guidance is not needed. Some analytical techniques, such as analysis of effects on visual resources, are adequately described in Bureauwide guidance, and are therefore not repeated here.

A preferred land use alternative will include a number of subalternatives, one of which will also be identified as preferred. The analysis of environmental consequences for the preferred land use alternative will focus primarily on the consequences of the timber harvest levels expected to occur if the allowable sale quantity (ASQ) and practices and constraints of the preferred subalternative prevail. The analysis will, however, also address the consequences of the highest and lowest ASQ identified in the subalternatives.

***Questions To Consider in Public Comments:** We are particularly interested in your responses to the following questions:*

- *Are the proposed assessment methods appropriate to the topics they would address?*

- *What suggestions do you have regarding the two impact topics – effects on elk and effects on spotted owls – for which we have not yet identified a preferred assessment method?*

- *Are there other topics you consider so sensitive or complex that guidance on analysis of effects is needed? If so, what assessment method do you recommend?*

Assumptions and Analysis Guidelines

The following guidelines will be used to develop the text of the introduction to the Environmental Consequences chapter of the Environmental Impact Statement:

A basic assumption of the analysis will be that sufficient funding and personnel will be available for implementation of the final decision, although the implications of potential funding constraints will be addressed through subalternatives. Another analytical assumption will be that the alternatives will be continued for many decades.

A 10-year representative timber management scenario will be developed based on the land use allocations for each alternative, as well as for the highest and lowest ASQ identified in the subalternatives, and used to assess potential site-specific impacts. The scenarios will represent the resource area staffs' assumptions as to possible locations of timber harvest units and road locations. Average annual levels of associated practices and intensive management practices for the decade of the plan will also be estimated. Each district will develop a formula for deriving estimates of logging practices and other activities linked to assumed locations of harvest units. The formula should be designed to assume in borderline cases, for analytical purposes, the practice which results in the greater impact. All acres are estimates; the derived annual acreage figures should be rounded up to 100s.

Due to unforeseeable events and adjustments made in site-specific planning, actual timber sale and management plans, upon implementation of the decisions, will undoubtedly differ from the 10-year scenarios. The scenarios will be used as an analytical tool, however, to help provide more specificity to analysis of impacts of the RMP. Actions implementing the planning decisions (such as timber sales and fertilization) will be analyzed in the future to determine if impacts would differ significantly from those described in the 10-year scenarios.

Since timing of logging is not under BLM control, for analysis purposes assume that all harvest units in any watershed may be logged within any 5-year period.

Mitigation will be incorporated into standard design features for each alternative. Assume that these mitigation measures will be applied as described.

Two time frames will be considered in analysis, short and long term.

Where appropriate, each analytical section should discuss the reliability of assumptions and analytical conclusions.

Analysis of the alternatives is based on the different levels of activities as shown in Table 3-AA-1, Management Actions. This table is an example of the types of management actions that will be inputs to the common alternatives for use in comparing impacts. Districts may expand this list as appropriate.

Table 3-AA-1 – Management Actions

	Alt. 1	Alt. 2	Alt. 3	Alt. N
Annual Allowable Sale Quantity				
Million bd. ft.				
Million cu. ft.				
Actions				
Transportation System (miles)				
New construction				
Reconstruction				
Timber Harvest (acres)				
Even aged				
Uneven aged				
Logging Practices (acres)				
Ground				
Cable				
Aerial				
Cultural Practices (acres)				
Precommercial thinning				
Commercial thinning				
Fertilization				
Brushfield/hardwood conversion				
Planting with regular stock				
Planting with genetically improved stock				
Site preparation (manual, mechanical, burning, herbicides)				
Vegetation control (manual, mechanical, herbicides)				
Animal damage control (pesticides, trapping, tubing)				
Fish Habitat Improv. (miles)				
Forage Seeding (acres)				
Road Closures (miles)				

Assessing Effects on Air Quality

Analytical Question

What assessment method will be used to determine how the RMP alternatives would impact air quality?

Assessment Method

Analytical Techniques: The analysis of air quality should be tiered to and modeled after the analysis process used in the Final Western Oregon Program - Management of Competing Vegetation Environmental Impact Statement (EIS) (expected to be issued later in 1988). This process is the result of discussions with the Oregon Department of Environmental Quality.

a) Biomass consumption

The techniques identified in Table 2-AIR-1 (see AMS guidance) should be used for developing biomass consumption estimates as a basis for calculations of emissions in Table 3-AIR-1.

b) Adjustment for burning acres based on accomplishment

Evaluation of burning accomplishments in western Oregon for the years 1983-1985 revealed a decreasing percentage of acres burned compared to acres planned (1983-88%, 1984-72%, 1985-68%, average 74%). Since differences may be annual variations and not necessarily a trend, the average accomplishment of 74% could be used in Table 3-AIR-1 to project emissions. If an analysis of 1986-1988 burning accomplishments for the district shows a different result, that average also could be used.

Display Techniques: In Table 3-AIR-1 show an estimate of emission components which would be produced under each alternative, and provide a comparison with the baseline to assist in determining potential air quality deterioration.

Table 3-AIR-1 – Average Emission Components From Slash Burning (Tons/Year)[1]

	Baseline	Alt. 1	Alt. 2	Alt. 3	Alt. N
Tons of Slash Burned[2]					
Water Vapor and Carbon Dioxide[3]					
Contaminants					
Particulates[4]					
Hydrocarbons[5]					
Carbon Monoxide[6]					
Sulfur Oxides[7]					
Nitrous Oxides[8]					
Total Contaminants					

[1]Estimated at 74% accomplishment level.
[2]Based upon 45.6 tons per acre for baseline and 33.4 tons per acre for alternatives (Sandberg et al. 1985).
[3]Average emission is 1 to 1 1/2 tons/ton fuel burned (Ryan et al. 1976, cited in Sandberg et al. 1978).
[4]Particulates are near 0.1 micrometer in diameter. Average emission is 26 pounds/ton fuel burned. To put the particulate levels presented here into perspective, wood burning stoves and fireplaces produced 8,500 tons of particulates in Portland; 1,900 tons in Medford; and 2,300 tons in Eugene during 1981.
[5]Hydrocarbons are a diverse class of compounds containing hydrogen, carbon and oxygen. Average emission is 25 pounds/ton fuel burned.
[6]Average emission is 20 to 500 pounds/ton fuel burned (260 pounds/ton displayed in Table). Carbon monoxide is unstable and dissipates rapidly in the atmosphere.
[7]Sulfur oxides (SOx) are produced in small quantities, since most forest residues contain less than 0.2 percent sulfur.
[8]Nitrous oxides (NOx) are only found in some very hot fires. The temperature required to fix atmospheric nitrogen is over 2,800°F, and these temperatures are not easily attained in slash burns. Average emission is 4 pounds/ton fuel burned.

Sources: Hall (1972), Sandberg et al. (1979), Sandberg et al. (1985), and U.S. EPA (1978).

Assessing Effects on Soil Productivity

Analytical Question

What assessment method will be used to determine how the RMP alternatives would impact long-term soil productivity as measured by tree growth?

Introduction

Long-term soil productivity should be divided into five major topics for impact assessment: 1) soil displacement; 2) soil compaction; 3) erosion; 4) nutrient depletion; and 5) physical conversion of the land base (excluding areas classified as nonsuitable woodland) to non-forest.

Stress the fact that most soils data in this section are based on limited studies and are intended for relative comparisons of planning alternatives, and should not be used as absolute values. Data on soil compaction are more complete and can be used for more quantitative assessment. These data are not meant to be directly used in determining the allowable cut. They are intended to help management understand the effects of various management scenarios in both the land use allocation alternatives and the sub-alternatives.

Explain that effects reported are in net equivalent acres (for example, see Subquestion II, assessment method for addressing impacts created by yarding operations, analytical step d.). Define net equivalent acres as: acres affected by management activity x estimated percent change of productivity due to that practice.

Subquestion I

What method will be used to determine how detrimental soil displacement affects long-term soil productivity?

Assessment Method

In a narrative, discuss importance of the organic matter layer, importance of the A horizon, and spatial distribution and the need to avoid large areas of displacement. Litter for nutrient recycling may be redistributed over small areas of displacement, and resulting adverse growth affects may be diminished when considering productivity for a harvest unit. Discuss how soil compaction usually accounts for soil displacement.

Subquestion II

What methods will be used to determine how detrimental soil compaction affects long-term soil productivity?

Assessment Method for Addressing Detrimental Soil Compaction Impacts Created by Yarding Operations

Assumptions:

a) Acreage estimate for each management practice (see a. in Analytical Technique, following) is determined from the 10-year representative timber management scenarios.

b) Areal extent (percent) of detrimental soil compaction created by management activity:

Ground-based yarding
- Unrestricted – 25% (Power, 1987; Dyrness, 1965)
- Designated skid trails – 12% (BLM Compaction Guidelines, 1983)

Cable yarding
- No suspension – 9% (Dyrness, 1967)
- One-end suspension – 3% (Dyrness, 1967)

c) Growth loss due to detrimental soil compaction

1) No amelioration practice for ground-based yarding = 47% (.47) growth loss in compacted areas (Wert and Thomas, 1981).

2) Use of rock ripper or brush blade for amelioration under optimum conditions = 24% (.24) residual growth loss in compacted and tilled areas (Andrus and Froehlich, 1983). Amelioration with a rock ripper or brush blade under optimum conditions is assumed to yield 50% growth recovery. With this 50% (.50) recovery, a 50% (.50) growth loss remains. Therefore, the residual growth loss is: .50 x .47 (unameliorated growth loss) = .24 (24%).

3) Use of winged ripper for amelioration under optimum conditions = 10% (.10) residual growth loss (Andrus and Froehlich, 1983). Use of a winged ripped under optimum conditions is assumed to yield 80% growth recovery which means that a 20% (.20) growth loss remains after amelioration. Therefore, the residual (after amelioration) growth loss is: .20 x .47 (unameliorated growth loss) = .10 (10%).

d) Compacted areas include a range of soil compaction.

e) Percent compaction amelioration equals percent growth recovery.

f) Optimum conditions for tillage with rippers exist when soils are at moistures such that tillage creates maximum shattering of the compacted zone and does not create soil shearing or glazing. Optimum tillage assumes all compacted areas are tilled. Accomplishing all operational tillage under optimum conditions is extremely difficult; the percent growth recovery decreases significantly when tillage occurs at other than optimum conditions.

g) Detrimental soil compaction occurs at depths greater than 2 inches and is evidenced by: 1) an increase in soil bulk density of 15 percent or more over the undisturbed level; 2) a macropore space (pores over 0.038 mm) reduction of 50 percent or more; and/or 3) a reduction below the 15 percent level as measured by an air permeameter.

Analytical Technique:

a) Determine acreage in each of the following management practices (obtained from the 10-year representative timber management scenarios):

Ground-based yarding
- Unrestricted
- Designated skid trails

Cable yarding
- No suspension
- One-end suspension

b) Use the percent figures listed in Assumption b to represent areal extent of detrimental soil compaction created by management activity.

c) Use the percent figures listed in Assumption c to represent growth loss due to detrimental soil compaction.

d) Calculate estimated loss of productivity as a result of management activities initiated during the 10-year planning cycle (net equivalent acres).

Acres of Practice (Practices listed in Assumption b, above)	x	Areal Extent of Detrimental Compaction (% Listed in Assumption b, above)	x	Growth Loss (% Listed in Assumption c, above)	=	Estimated Acre Equivalent of Growth Loss

Example: 5,000 acres ground-based yarding with designated trails, ameliorated with winged rippers.

Acres of Practice: 5000	x	Areal Extent: 12% (.12)	x	Growth Loss 10% (.10)	=	Net Equivalent Acres of Productivity Loss

5000 x .12 = 600 x .10 = 60
or
5000 x (.12 x .1) = 5000 x .012 = 60

Display Techniques:

a) Narrative: Describe general relationships between productivity and soil compaction.

b) Enter estimated loss of productivity in Table 3-S-I.

Assessment Method for Addressing Detrimental Soil Compaction Impacts Created by Tractor Piling Operations

Assumptions:

a) Acreage estimate for tractor piling is determined from the 10-year representative timber management scenarios.

b) When analyzing tractor yarding and piling, only growth loss figures for piling are used (do not include growth loss from yarding, addressed under Subquestion II).

c) Growth losses vary with differing conditions (amount of material to be piled, soil moistures, machine operator, depth of organic matter layer and A horizon, etc.) of harvest units. Therefore, a range of growth loss on tractor piled acres, 10-30% (.10-.30) (McColl and Power, 1984), should be used to reflect these different conditions.

d) Growth losses after amelioration practices (assumes restoration of growth due to compaction amelioration only, not topsoil removal amelioration).

1) Use of rock rippers, brush blades, etc. for amelioration under optimum conditions results in residual growth losses on tractor piled acres from 5-15%. This 5-15% results from assuming a 50% growth recovery which yields a remaining 50% (.50) growth loss. Therefore, the residual (after amelioration) growth loss varies from:

.5 x .10 (10%) (unameliorated growth loss) = .05 (5%)
to
.5 x .30 (30%) (unameliorated growth loss) = .15 (15%).

2) Use of winged rippers for amelioration under optimum conditions results in residual growth losses on tractor piled acres from 2-6%. This 2-6% results from assuming an 80% growth recovery which yields a remaining 20% (.20) growth loss. Therefore, the residual (after amelioration) growth loss varies from:

.20 x .10 (10%) (unameliorated growth loss) = .02 (2%)
to
.20 x .30 (30%) (unameliorated growth loss) = .06 (6%).

e) Optimum conditions for tillage with rippers exist when soils are at moistures such that tillage creates maximum shattering of the compacted zone and does not create soil shearing or glazing. Optimum tillage assumes all compacted areas are tilled. Accomplishing all operational tillage under optimum conditions is extremely difficult; the percent growth recovery decreases significantly when tillage occurs at other than optimum conditions.

Analytical Techniques:

a) Determine acreage of tractor piling (obtained from the 10-year representative timber management scenarios).

b) Use the percent figures given in Assumptions c or d to represent growth loss due to detrimental soil displacement and compaction created by tractor piling.

c) Calculate estimated loss of productivity as a result of management activities initiated during the 10-year planning cycle (equivalent net acres).

Acres Tractor Piled	x	Growth Loss (%) (Listed in Assumptions c and d, above)	=	Estimated Acre Equivalent of Growth Loss

Display Techniques:

a) Narrative: Explain assumed growth loss due to compaction (cite references).

b) Enter estimated loss of productivity in Table 3-S-I.

Subquestion III

What method will be used to determine how erosion (surface and mass wasting) affects long-term soil productivity?

Assessment Method for Surface Erosion: Discuss in a narrative:

a) No quantitative or qualitative analysis is possible due to lack of data relating forest productivity to surface erosion.

b) Harvest units with steep slopes (70%) and hot burns may have erosion rates greater than weathering rates with a resultant net loss of soil over a rotation.

c) Explain that net soil losses or gains for a rotation can be estimated using weathering and raveling rates.

Assessment Method for Mass Wasting (translational failures, debris torrents and avalanches): Discuss in a narrative:

a) Major concerns and impacts are off-site (water quality, fisheries).

b) Landslides in Western Oregon generally cover less than one percent of the land base.

c) Discuss road and logging related landslides.

d) Discuss growth losses due to landslides (Miles, Swanson, and Youngberg, 1984).

Subquestion IV

What method will be used to determine how altering nutrient status affects long-term soil productivity?

Assessment Method for Areas Not Dominated by Soils with a Xeric Moisture Regime or Cryic Temperature Regime: FORCYTE 11

Assumptions:

a) Acreage estimates for rotation ages and types of burns are based on the 10-year representative timber management scenarios.

b) Calibration of FORCYTE Model 11 will begin in June 1988, and the calibrated model will be operational by May 1989.

c) Use of assumptions in FORCYTE.

d) Acres of light, moderate, and severe burns will be identified in the 10-year representative timber management scenario.

e) In the FORCYTE Model, growth loss is equated to nitrogen loss only.

Analytical Technique for Rotation Age:

a) Using the 10-year representative timber management scenarios, determine acreage expected to be harvested in each rotation age for each site class.

b) Use FORCYTE Model 11 to estimate percent change, if any, in productivity.

c) Calculate estimated change (positive, negative, or unchanged) of productivity as a result of long-term planned management activities expected to be harvested (sold) during the 10-year life of the plan (equivalent net acres).

Analytical Technique for Prescribed Burning:

a) Using the 10-year representative timber management scenarios, determine acreage in each site class of light, moderate, and severe burns.

b) Use FORCYTE Model 11 to estimate percent change, if any, in productivity.

c) Calculate estimated change (positive, negative, or unchanged) of productivity as a result of prescribed burning initiated during the 10-year planning cycle (equivalent net acres).

Display Technique for FORCYTE 11 Assessment of Rotation Age and Prescribed Burning:

a) Narrative:

1) Brief explanation of FORCYTE 11 Model.

2) Discuss nitrogen as the "index" nutrient.

3) Discuss nitrogen content by forest component and recycling rates.

4) Discuss general relationships of forest management practices and nitrogen cycling; for example, how do practices such as harvesting and site preparation affect nitrogen on a site.

5) Discuss possible effects of varying utilization standards (gross yarding, whole tree yarding, etc.) and rotation lengths.

b) Enter estimated productivity change, if any, in Table 3-S-1.

Assessment Method for Areas Dominated by Soils with a Xeric Moisture Regime or Cryic Temperature Regime: Discuss in a narrative:

a) Discuss nitrogen as the "index" nutrient.

b) Discuss the nitrogen cycle:

1) Sources of nitrogen additions and losses.

2) Nitrogen content by forest component, organic matter layer and soil.

3) Nitrogen recycling rates.

c) Discuss general relationships of forest management practices and nitrogen cycling; discuss how practices such as harvesting and site preparation affect nitrogen on a site.

d) Discuss possible effects of varying utilization standards (gross yarding, whole tree yarding, etc.) and rotation lengths.

e) Discuss the relationship of fire history and present vegetation and productivity level.

f) Discuss how the planning alternatives may affect nitrogen cycling.

Subquestion V

What method will be used to determine how conversion of the land base, excluding areas classified as nonsuitable woodland, to non-forest affects long-term soil productivity?

Assessment Method

a) Determine acres to be converted to non-forest (i.e., new road construction, quarry development, utility corridor establishment, etc.)

b) Report acres to be converted to non-forest as loss of productivity as a result of management activities initiated during the 10-year planning cycle.

Summary Table

Display Table 3-S-1 if FORCYTE 11 is utilized.

Table 3-S-1 – Estimated Loss of Productivity as a Result of Management Activities Initiated During the 10-Year Planning Cycle (Acres)

	Alt. 1	Alt. 2	Alt. 3	Alt. N
Soil Displacement	Acreage Data Unavailable – See Narrative			
Soil Compaction				
Erosion	Acreage Data Unavailable – See Narrative			
Nutrient Status[1] Rotation Age Prescribed Burning				
Conversion to Non-forest				
Totals				

[1]These numbers are based on numerous assumptions and are intended for relative comparisons of planning alternatives and should not be used as absolute values.

Display Table 3-S-2 if FORCYTE 11 is not utilized.

Table 3-S-2 – Estimated Loss of Productivity as a Result of Management Activities Initiated During the 10-Year Planning Cycle (Acres)

	Alt. 1	Alt. 2	Alt. 3	Alt. N
Soil Displacement	Acreage Data Unavailable - - See Narrative			
Soil Compaction				
Erosion	Acreage Data Unavailable - - See Narrative			
Nutrient Status	Acreage Data Unavailable - - See Narrative			
Conversion to Non-forest				
Totals				

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Assessing Effects on Water

Analytical Question

What assessment method will be used to determine how the RMP alternatives would impact water resources?

Assessment Method

An assessment method was developed by BLM's western Oregon hydrologists which produces a relative value for watershed conditions based on physiographic conditions and management activities. This method can be used to compare one management plan with another, or it can be used to compare one basin with another. It gives no quantitative value of any kind.

Rating elements are those physiographic conditions (eg., soil type, precipitation) and management activities (eg., logging methods) which have been shown to have some effect in hydrologic attributes.

Hydrologic attributes are the parameters of water quality (e.g., sediment, toxic substances), and the conditions of water channels that are of some concern to a beneficial user .

This method was developed by rating each of the elements on a scale from 1 to 2, where 1 has no effect on an attribute and 2 has a maximum plausible effect. Each element was then given a multiplier depending on its relative importance, and the expected variability. The product of all elements is the watershed condition index.

The formula for the watershed condition index is:

$$WC = RIxLIxVIxCIxSIxMIxKIxAIxDIxPIxFI$$

Where:
- WC = watershed condition index,
- RI = road index,
- LI = logging index,
- VI = vegetation index,
- CI = silvicultural index,
- SI = riparian index,
- MI = mining index,
- KI = soils index,
- AI = slope/aspect index,
- DI = drainage density index,
- PI = precipitation index,
- FI = flow index.

Analytical Techniques: Analysis will be done by analytical watershed. A cumulative effects analysis will be done for all activities in a watershed as well as an analysis for BLM-authorized activities only. Representative watersheds, or subwatersheds, may be selected to be analyzed, and the results used to represent the analytical watershed. Watersheds that contain less than 25% BLM lands need not be considered as analytical watersheds.

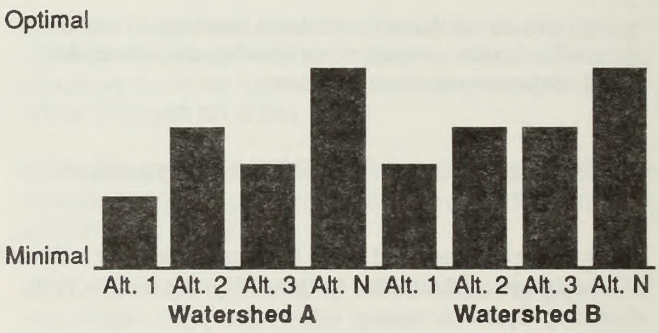
Estimates of BLM management activities under each alternative will be derived from the 10-year representative timber management scenarios. Aerial photos and/or personal contacts will be used as a basis for predicting management activities on other lands.

Analyze each management activity and analytical watershed using the above formula. The various rating elements are calculated by using the following methods. The watershed condition index can be calculated by using a LOTUS 123 program that has been developed.

A narrative will be written describing the effects of management activities on the various hydrologic attributes. When differences in alternatives are expected to have different effects on an attribute, then the effects will be described by alternative. The narrative will include, but not be limited to a discussion of: 1) sediment, 2) dissolved solids, 3) mass moment and other erosional processes, 4) chemical contamination, 5) flows, 6) temperature, 7) riparian vegetation, 8) channel condition, 9) cumulative effects, and 10) water quality standards.

Display Techniques: The watershed condition will be shown on a bar graph (Fig. 3-WA-1). The values of the watershed condition need not be shown on the graph because these are only relative numbers.

Figure 3-WA-1 – Relative Watershed Condition for Each Analytical Watershed by Alternative (example)



Roads Rating Method: Roads will be rated by the estimated acres of road in the watershed at the end of the planning cycle, and the type of surface.

The formula for the Road Index (RI) is:

$$RI = 1+(P+3R+6D) \times 10/W$$

Where:
- P = paved roads (acres)
- R = rocked roads (acres)
- D = dirt roads (acres)
- W = watershed size (acres)

Logging Rating Method: Logging will be rated by the estimated number of acres for each yarding method to be done in the watershed during the decade.

The formula for the Logging Index (LI) is:

$$LI = 1+(8Gu+3Gd+3Hn+Hs) \times 0.35/W$$

Where:
- Gu = ground based system – unrestricted (acres)
- Gd = ground based system – designated skid trails (acres)
- Hn = highlead system – no suspension (acres)
- HS = highlead system – one end suspension (acres) (complete suspension is rated 0)
- W = watershed size (acres)

Flow Rating Method: Flow will be obtained by using the USGS method of predicting a 2-year flood and measured in cfs/sq. mi. This calculation can be done on the program developed by Mark Butler.

The formula for the Flow Index (FI) is:

$$FI = 1+Q/100$$

Where: Q = two year flood (cfs/sq. mi.)

Soils Rating Method: Soils will be rated by using the k factor from the Universal Soil Loss Equation. The soil series will be taken from the *General Soil Map, State of Oregon,* USDA, Soil Conservation Service, 1986, or a more detailed source, if available. The k number can be found in the SCS "Soil Interpretation Records."

The formula for the Soils Index (KI) is:

$$KI = 1+(S1xK1+S2xK2...) \times 0.00234/W$$

Where:
- S1, S2... = acres of each soil series in the watershed
- K1,K2... = k numbers
- W = watershed size (acres)

Slope-Aspect Rating Method: The slope will be calculated using the methods for "basin land slope Sb1" in the *National Handbook of Recommended Methods for Water Data Acquisition,* USDI, Geological Survey, Office of Water Data Coordination, 1977 (as revised; however, the average will not be taken. At each point a + or - will be recorded indicating slopes greater than (+) or less than (-) 60%. In situations where aspect is a significant factor, the same procedure will be used with critical aspects (+) and noncritical aspects (-). The formula used to calculate Slope Index (AI) is:

$$AI = 1+(S+A) \times 2/W$$

Where:
- S = area > 60% slope (acres)
- A = area that is critical (acres)
- W = watershed size (acres)

Drainage Density Rating Method: Drainage density will be calculated by using the *National Handbook of Recommended Methods for Water Data Acquisition.*

The formula for Drainage Density Index (DI) is:

$$DI = 1+DD/10$$

Precipitation Rating Method: Two-year twenty four-hour precipitation amounts will be obtained from the *Precipitation Frequency Atlas of the Western United States, Vol. X, Oregon,* NOAA Atlas 2, J.F. Miller et al., U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, 1973.

The formula for Precipitation Index (PI) is:

$$PI = 1+P/7$$

Vegetation Type Rating Method: For the present condition, or any single year, the following ratings will be used:

Vegetation Type	Rating
Meadow (Grass)	8
Permanent Brush	3
Disturbed (> 20% Bare Soil)	10
Forest	
0-3 Years	8
3-8 Years	5
8-12 Years	3
12-20 Years	1
20 Years+	0

Each vegetative type rating will be multiplied by the acres of that type; the sum divided by total acres will be the rating for present conditions. When partial cuts are to be done multiply the percent harvested by the acres.

When the rating is being calculated for the 10 year period, use the following formula to calculate the Vegetation Index (VI):

$$VI = 1+(.7P + 3.5C) \times 0.256/W$$

Where:
- VI = the vegetation index.
- P = the rating for the present condition
- C = the total acres of the watershed or BLM lands to be harvested
- W = watershed size (acres)

Silvicultural Practices Rating Method: Five silvicultural practices that can affect water quality have been identified. The practices and their relative ratings are listed below:

Practice	Rating
Tractor Piling	10
Burning	5
Herbicides	3
Fertilization	2
P.C.T.	1

The Silvicultural Index (CI) will be calculated using the formula:

$$CI = 1+(10T+5B+3H+2F+P)/W/7$$

Where: T, B, H, F, and P = acres of each practice
W = watershed size (acres)

Riparian Rating Method: Riparian quality will be rated for each stream reach. The quality will be rated as: Good/Optimal, Fair or Minimal; and will be stored on Microstorms.

1. Quantify the riparian quality rating by using Table 3-WA-1.

Table 3-WA-1 – Riparian Quality Ratings

	Stream Order		
	1	2	3+
Good/Optimal	0	0	0
Fair	2	4	6
Minimal	6	8	10

2. Calculate the average rating by multiplying the ratings by the number of miles, then dividing by the total miles and adding them together.

The formula for Riparian Index (SI) is:

SI = 1+(miles of good 1st order x 1+miles of good 2nd order x 2...)/total miles/6

Mining Rating Method: Mining will be rated by the number of operation notices for placer mining. Only existing notices will be considered unless future plans are known.

The formula for Mining Index (MI) is:

$$MI = 1+N/M/8$$

Where: N = number of notices
M = miles of streams

Assessing Effects on Riparian Habitat

Analytical Question

What assessment method will be used to determine how implementation of each alternative would affect riparian zones (and/or riparian management areas (RMAs)) where the true riparian zone is not enough to protect fish and water resources?

Preferred Assessment Method

Analytical Techniques:

a) Riparian zones are defined in the Glossary. See Chapter Four of *Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington*, E. R. Brown, ed., 1985, for further information.

b) The assessment of riparian habitats will be accomplished by stream reach.

c) The following are the minimum required data elements desired to meet the analysis of riparian habitat:

- Reach identification
- Vegetation age from the 0perations Inventory

• Riparian Quality Rating	Riparian Tree Average DBH in inches
Minimal	0-11"
Fair	11-21"
Good/Optimal	21"+

- Riparian Acres in each reach except first order which will be summed by stream name
- Acres to be protected
- Short-term trend
- Long-term trend

d) The vegetation condition by reach will be developed using the following tree sizes from the Operations Inventory:

Code	Description	Size Class
1	Seedling and Sapling	0-5"
2	Pole Timber	5-11"
3	Saw Timber	11-21"
4	Mature old timber	21"+

In Western Oregon riparian habitat is heavily influenced by tree size which governs large woody debris contribution/ litter fall to streams, nest cavity availability and other wildlife use. Tree size was chosen as the best primary representation of riparian habitat productivity. Stand age is an indicator of tree size but the actual DBH/age will vary among coastal, Cascade, Klamath Mountain, and other western Oregon regions. Operations Inventory data portrays both age and DBH which can be used for developing this assessment.

e) A list of the acres in riparian zones or RMAs will be developed for each reach of second order and larger. First order streams will not be listed by reach. However, the number of acres by stream order by stream name will be listed for first order streams (Table 3-RIP-1). The average vegetation size (DBH) will be listed for all reaches.

f) The acres of riparian zone (or RMA that would be protected in an alternative) will be listed by stream reach.

g) Based upon the proposed management under each alternative, a projection of trend will be made for each reach. The short-term trend will be for the 10-year life of the RMP. The long term trend will be considered as if the plan will continue to be implemented in perpetuity. Trend should be expressed as improving (moving toward climax), declining (moving away from climax) or stable (staying the same).

h) The short-term and long-term trends will be identified. The rating will be subjective based on the size and diversity of the stand. The loss in quality due to any activity that reduces stand size (DBH) or the species diversity or its composition will be recognized.

i) All data will be compiled as in Table 3-RIP-1.

Alternative to Preferred Assessment Method

If data by reach is unavailable, array data by analytical watershed as defined for analysis of effects on water resources.

Display technique: Data will be summarized by district, resource area and analytical watershed, as in Table 3-RIP-2.

Assessing Effects on Fish

Analytical Question

What assessment method will be used to determine how implementation of each alternative would affect fish habitat and populations?

Assessment Method

There is presently no standard technique designed to address this question. The approach to be used is outlined below.

Assumptions:

a) Stream inventories are available.

b) Fish species distribution is available.

c) Fish abundance estimates will be available following consultation with ODFW.

d) The following stages of vegetation (from the Operations Inventory) and habitat quality are directly related to fish population:

Habitat Qualtity	Riparian Tree Size (DBH)
Minimal	0-11"
Fair	11-21"
Good/Optimal	21"+

Analytical Techniques:

The habitat quality model which rates stream reaches as minimal, fair, good/optimal requires estimation of species population carrying capacity. The following steps should be followed to develop the information.

a) Identify all fish inhabited reaches and segregate by species (use reach attributes to identify every reach).

b) Determine the expected short- and long-term habitat quality rating for each reach for each alternative.

c) Using the habitat quality rating, estimate the smolt production capacity for each anadromous species by reach.

d) Population estimate figures will be developed in consultation with ODFW personnel for watersheds within the planning area.

e) Using projected habitat changes for each alternative, estimate a long-term and a short-term trend for both the habitat and the population.

f) When assessing the quality of habitat, the primary rating will be based upon the forest stand tree DBH of the riparian zone or RMA. However, a related factor analysis must be conducted to determine if other factors are raising or lowering the quality of the reach. Examples: The withdrawal of water for irrigation may negate the value of a 200+ (stand age) riparian habitat for fish. The heavy sediment yield of a watershed may lower the rating of reaches in that system. Rehabilitation/enhancement with structures may raise the quality rating of a 25 year old alder stand. The availability of abundant natural structure, beaver dams or side channels may raise the rating of a reach.

g) All data will be compiled as in Table 3-F-1.

Display techniques: Table 3-F-2 will be used to summarize the effects of each alternative. Summary tables will be displayed for each analytical watershed, resource area and district. Each species must be listed separately in a manner that will illustrate the expected population produced by each alternative. Coho salmon are the featured species in these examples.

Table 3-RIP-1 – Initial Data Compilation by Stream Reach, Riparian Zone Trend (example)

BLM Reach[2]	Riparian Zone or RMA: Tree Size Code[4]	Riparian Zone or RMA: Quality Rating[5]	Riparian Zone or RMA: Total Acres	Riparian Zone or RMA: Protected RMA Acres	Projected Trend Alternative 3[1]: Short Term	Projected Trend Alternative 3[1]: Long Term
4-TIOG003	3	F	40	40	Improve	Improve
4-BURN004	4	G/O	250	20	Decline	Decline
3-SHOT001	1	M	50	10	Decline	Decline
5-TIOG009	4	G/O	400	400	Stable	Stable
3-SUSA001	4	G/O	50	50	Improve	Improve
2-SUSA023	2	M	20	0	Improve	Decline
Order/Stream Name						
1-Susan Cr.[3]	4	G/O	2000	0	Stable	Decline

[1]Array similar columns for each alternative or group of alternatives with similar protection.
[2]BLM Reach identification codes are cross referenced to USGS Hydrologic Unit codes and EPA stream reach codes.
[3]Data for Susan Creek first order streams is a summary of all first order streams in the Susan Creek sub-basin.
[4]Information obtained from the Operations Inventory.
[5]Quality rating: M = minimal; F = fair; G/O = good/optimal.

Table 3-RIP-2 – Summary – Riparian Trend by Alternative (example)

Management Unit	Riparian Zone or RMA: Minimal	Riparian Zone or RMA: Fair	Riparian Zone or RMA: Good/ Optimal	Projected Trend Alternative 3[1]: Short Term	Projected Trend Alternative 3[1]: Long Term
District	2000	6000	2000	Improve	Decline
Resource Area 1	500	3000	500	Improve	Decline
Resource Area 2	1000	2000	500	Improve	Decline
Resource Area 3	500	1000	500	Improve	Decline
Analytical Watershed 1	0	200	250	Stable	Improve
Analytical Watershed 2	200	1000	0	Decline	Stable
Analytical Watershed 3	500	1000	180	Improve	Decline

Table 3-F-1 – Initial Data Compilation by Stream Reach, Estimated Average Annual Production (example)

			Alternative 3–Coho Salmon						
			Habitat Quality			Estimated Average Annual Production[2]		Population Trend	
BLM Reach[1]	Miles	RZ/RMA Acres	Minimal	Fair	Good/Optimum	Smolt	Adult	Short Term	Long Term
4-TIOG001	1.5	36	1.5			1500	75	Stable	Decline
3-TIOG002	1.2	30		1.2		1300	65	Stable	Improve
4-BURN001	0.5	12			0.5	500	25	Decline	Decline

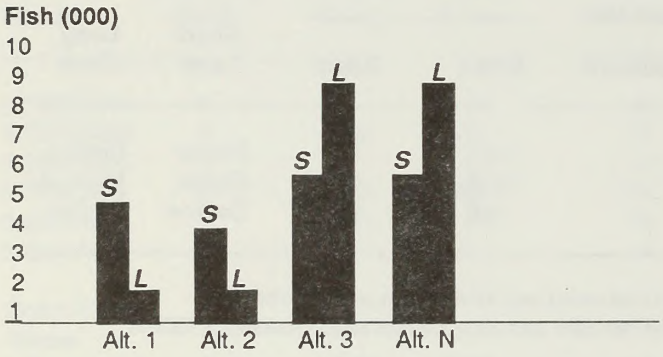
[1]BLM Reach identification codes are cross referenced to USGS Hydrologic Unit codes and EPA stream reach codes.
[2]Reach production estimates are calculated by BLM from estimates of smolt densities and adult survival rates provided by ODFW.

Table 3-F-2 – Summary – Estimated Average Annual Production (example)

			Alternative 3–Coho Salmon						
			Habitat Quality			Estimated Average Annual Production		Population Trend	
Management Unit	Stream Miles	RZ/RMA Acres	Minimal	Fair	Good/Optimum	Smolt	Adult	Short Term	Long Term
District	250	10,000	2,000	6,000	2,000	250,000	125,000	Stable	Decline
Res. Area 1	125	4,000	500	3,000	500	130,000	6,500	Stable	Improve
Res. Area 2	75	3,500	1,000	2,000	500	70,000	3,500	Decline	Decline
Res. Area 3	50	2,500	500	1,000	1,000	50,000	2,500	Stable	Decline
An. Wtrshed 1	23	550	0	200	250	23,000	1,150	Stable	Improve
An. Wtrshed 2	50	1,200	200	1,000	0	50,000	2,500	Decline	Decline
An. Wtrshed 3	70	1,680	500	1,000	180	70,000	3,500	Decline	Decline

The information developed in tabular form for fish populations and trends districtwide by alternative will be displayed in bar graph form, as indicated in Figure 3-F-1.

Figure 3-F-1 – Estimated Average Short and Long Term Smolt Population by Alternative (example)



Assessing Effects on Wildlife

Analytical Question

What assessment method will be used to determine how the RMP alternatives would impact important wildlife habitats and populations?

Subquestion I

What method should be used to analyze habitat suitability for elk and how this affects population trends? How should the selected model be used to analyze alternatives?

Assessment Methods

Several methods are available to analyze impacts of timber harvest on elk populations. Two approaches were selected for consideration, but a preferred method was not selected at this time. Assumptions for use of these methods, analytical techniques for conducting evaluations, and display techniques are described below. Existing numbers, management goals, and optimal numbers of elk will be estimated (if possible) for important elk management areas after consultation with ODFW biologists.

Optional Method 1. Wisdom et al., *A Model to Evaluate Elk Habitat in Western Oregon.*

Assumptions/Comments:

a) The Wisdom model has been accepted for application to forest-wide planning by an interagency task force convened by the U.S. Forest Service. The task force is developing guidelines for use and fine tuning of the model. Other agencies represented on the task force include BLM, the Oregon Department of Fish and Wildlife, and the Washington Department of Wildlife. The results of this effort are due by August 1988.

b) Vegetation data on adjacent private lands are available to assess cumulative effects.

c) Evaluations will be conducted for designated elk management areas only.

d) Allowable sale quantity (ASQ) can be determined for designated elk management areas.

e) A functional computer program is available for generating the Wisdom model.

f) See Wisdom et al. (p. 11) for a complete list of assumptions pertinent to the use of the model.

g) Use the following forest stages (based on Wisdom model, p. 19):

- Forage areas = 0-20 years
- Hiding cover = 20-50 years
- Thermal cover = 50-120 years
- Optimal cover = 120+ years

Analytical Techniques:

a) Refer to Wisdom, et al. publication for details on use of the model (p.23-31); in summary, the technique involves calculation of four habitat effectiveness indices including sizing and spacing of forage and cover areas, density of roads open to motorized vehicles, cover quality, and forage quality.

b) Conduct analysis for representative "high use" elk areas (1,000-6,000 acres) and extrapolate effects to entire planning area.

c) Determine deviations from the optimum effectiveness index for each alternative and assume parallel changes in elk use.

Optional Method 2. Cover/forage Ratio

Assumptions/Comments

a) Elk respond to the changing cover/forage area ratio produced by timber management activities.

b) Habitat assumptions include: 50 % thermal cover (at least 25% is optimal thermal cover), and about 20 % forage produces required habitat (ODFW Fish and Wildlife Habitat Protection Criteria, 1986); all forested sites are potential cover; water is not a limiting factor; cover and forage areas approximate optimum size; and arrangement of cover and forage areas is nearly optimum.

c) Vegetation data on adjacent private lands are available to assess cumulative effects.

Analytical Techniques:

a) Determine cover/forage ratios for each alternative by reference to ASQ computer-runs for each elk management area.

b) Determine deviations from the optimum cover/ forage ratio for each alternative and assume parallel changes in elk use.

Display Techniques (either method):

For display purposes, record whether elk are positively (+) or negatively (-) impacted (see Table 3-W-1 below) based on the following deviations from an optimal level:

—	80-100%
-	60-80%
0	40-60%
+	20-40%
++	0-20%

Table 3-W-1 – Probable changes in elk populations during next decade (example)

Existing Population	Alt. 1	Alt. 2	Alt. 3	Alt. N
Moderate	—	-	+	++

Subquestion II

What method should be used to predict the number of snags that would be available after 10 and 100 years for each alternative, and how this relates to changes in population levels of cavity-users?

Assessment Methods

There are two methods which appear equal in their capability to estimate the relevant effects.

Optional Method 1. Neitro, et al., method to analyze multiple species snag requirements (described in *Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington* edited by E. Reade Brown, 1985).

Assumptions/Comments:

a) Method assumes that by managing for dominant woodpeckers, requirements of other cavity users will be fulfilled.

b) Method assumes direct correlation between snag densities and population densities of cavity users.

c) Method assumes the following minimum guidelines have been established for most alternatives (except alternatives where minimum standards of Oregon Forest Practices Act rules apply):

- Leave all soft snags except where they are unacceptable for safety, logging systems, or burning considerations.

- Leave hard snags, or green trees (if needed for snag mitigation purposes), both to provide the current needs of hard-snag-dependent species, and to serve as a source of future soft snags.

- Distribute hard snags according to the following criteria: in harvest units, retain the number of hard snags or green trees to support at least 20% of the potential population of dominant woodpeckers (between 25-35% of these should be individually scattered and the remaining 65-75% should be in clumps larger than 2 acres); retain all hard snags in areas reserved from timber harvest (e.g., nonsuitable woodland, protected old growth/spotted owl, riparian, bald eagle) (see Draft Siuslaw National Forest Plan).

Analytical Techniques:

a) Estimate existing snag levels for each forest age class. These snag levels may possibly be determined from projections of snag densities currently being measured on timber inventory plots (or by using other data already collected including snag data from literature sources). Snag densities are presently being determined for the following conifer age classes: 1-30, 40-80, 90-190, and 200+. Hardwood stands are also being measured. See BLM's *Forest Inventory Field Instructions For Western Oregon,* for further details. Snag densities for other habitats such as nonsuitable

woodlands and riparian management areas (RMA) may be estimated from timber inventory plots (or by use of other data if available) if age classes are known.

b) Estimate snag densies for each age class for the range of alternatives (see Table 3-W-2) after evaluating the strategy of each alternative to provide habitat for cavity dwellers.

c) Select desired management level for dominant woodpeckers as percent of maximum populations (e.g., 60% level).

d) Determine snag densities required to achieve the desired management level for dominant woodpeckers (see Neitro et al., p. 145).

e) Compare snag densities determined in "a" and "b" above with snag densities required to achieve desired management level as determined in "d"; predict changes in population levels based on deviations between these values.

Optional Method 2

Assumptions/Comments:

a) Alternatives will describe strategies for providing habitat for cavity dwellers in terms of number of wildlife trees, size of wildlife trees, percentage of land base managed for wildlife trees, and configuration of the trees (single tree or undisturbed blocks).

b) Strategies taken to provide for avian cavity dwellers will fulfill needs of mammalian cavity dwellers.

c) Effects will be assessed by comparing long-term with current situation in the context of maximum potentials.

d) No wildlife trees will be less than 11" dbh, no more than 5% of the trees left will be under 15" dbh, at least 5% of the trees left will be over 25" dbh and the remainder will be over 17" dbh.

Analytical Techniques:

a) Review each alternative to determine the strategy for cavity dweller habitat management in terms stated under assumptions.

b) Record the specific strategies relative to numbers of snags, distribution of snags, percentage of land base, and configuration of snags (individual or blocks of snags).

c) Compute population potentials from Tables 3-W-3 and 3-W-4 using the information derived from b above.

d) Sum potentials for the various elements of the management strategy to determine overall management level.

Table 3-W-2 – Calculation of Snag Densities (example)

	Existing Condition			Alternative 1			Alternative N		
Age Class	Acres	Snags/ Acre	Total Snags	Acres	Snags/ Acre	Total Snags	Acres	Snags/ Acre	Total Snags
0-30	3,000	1	3,000	500	0	0	1,000	1	1,000
40-80	10,000	1	10,000	12,000	1	12,000	6,000	2	12,000
90-190	5,000	2	10,000	3,000	2	6,000	8,000	2	16,000
200+	2,000	3	6,000	0	0	0	5,000	3	15,000
Totals	20,000		29,000	20,000		18,000	20,000		44,000
Snag density for entire forest (No./acre)									
	29,000 /20,000 = 1.5			0.9			2.2		

Table 3-W-3 – Numbers of Snags per 100 Acres Required to Support Various Population Levels of the Five Western Oregon Woodpeckers

Snag DBH	Bird Species	Snags/100 acres by percent of maximum potential									
		10	20	30	40	50	60	70	80	90	100
11"	Downy Woodpecker	2	3	5	6	8	10	11	13	14	16
15"	Hairy Woodpecker	19	38	58	77	96	115	134	154	173	192
	Red-breasted Sapsucker	5	9	14	18	23	27	32	36	41	45
17"	Northern Flicker	5	10	14	19	24	29	34	38	43	48
25"	Pileated Woodpecker	1	1	2	2	3	4	4	5	5	6
Totals		32	61	93	122	154	185	215	246	276	307

Table 3-W-4 – Number of 2-Acre Blocks per 640 Acres Necessary to Meet Potential Population Levels of the Five Western Oregon Woodpeckers[1]

Percent of Potential Population	Number of Two Acre Blocks
10	10
20	20
30	31
40	41
50	51
60	61
70	71
80	82
90	92
100	102

[1]Downy woodpecker was used to derive values as it has smallest home range size (6 acres).

Display Techniques: Evaluations can be displayed in tabular form as percent deviations from densities required to achieve management objective or simply as being positively (+) or negatively (-) affected (see Table 3-W-5) based on the following deviations from a management objective:

—	80-100%
-	60-80%
0	40-60%
+	20-40%
++	0-20%

Table 3-W-5 – Probable Changes in Dominant Woodpecker Populations During Next Decade (example)

Existing Populations	Alt. 1	Alt. 2	Alt. 3	Alt. N
Moderate	—	—	-	-

Subquestion III

What method should be used to estimate impacts on spotted owl habitat and populations?

Assessment Methods

Approaches are considered that would predict the number of habitat sites that would produce spotted owl young on a sustained basis in the short and long term, and to assess the suitability of these sites and intervening dispersal habitat to provide for successful juvenile dispersal between BLM sites, and between BLM sites and adjacent U.S. Forest Service sites.

Several approaches, ranging in complexity from parametric and probabilistic methods to subjective methods, were identified to evaluate impacts of the various alternatives on spotted owls. Generally, the more complex approaches require more rigorous assumptions than more subjective approaches, which are based on the experience of biologists to assess such factors as historic occupancy of a site, and suitability of a site to produce owls on a sustained basis. The viability analysis for the spotted owl conducted by the U.S. Forest Service (see *Supplement to the Environmental Impact Statement for an Amendment to the Pacific Northwest Regional Guide: Spotted Owl Guidelines* (hereafter referred to as the USFS EIS Supplement)) assessed viability throughout the entire Pacific Northwest and includes owls on BLM-administered lands in the overall analysis. The Bureau accepts the Forest Service analysis regarding effects on lands not administered by BLM, and thus will tier to it in consideration of regionwide effects. BLM analysis of impacts on spotted owls will occur either at the State Office level by contractual agreements (regression and probabilistic analysis) or at the District level if more subjective approaches are chosen. If a subjective methodology is chosen, each BLM District will evaluate the capability of each known owl site to produce owls on a sustained basis, and the suitability of dispersal habitat for juveniles between owl areas. Options were identified, but a preferred option was not selected.

The following general approaches are being considered:

Parametric Approach – Multiple regression model to analyze the capability of each owl site to produce offspring on a sustained basis.

Probabilistic Approach – Use of Bayes Theorem to construct a Habitat Suitability Index (HSI).

Subjective or Ranking Approaches – Linkage and arithmetic.

Optional Method 1. Parametric Approach

Assumptions/Comments:

a) A multiple regression approach would analyze stand structure (including presence of plant community types such as riparian, second growth conifer, etc.), amount of suitable habitat (old growth and mature), intraspecific competition, and fragmentation effects in the same analysis, unlike the USFS habitat capability approach which considered these variables independently.

b) The regression analysis would be conducted at the State Office level on a contractual basis. The involved personnel would visit each District to acquire necessary data to conduct the analysis.

c) The regression approach is best applied when habitat variables are measured on precisely known owl home ranges (BLM/USFS are currently collecting these data from radio telemetry work, but they may not be available in time for the RMP analysis); however, the technique may be applied using circles of 2-1/8 miles which estimate the maximum spotted owl home range. (Possible confounding effects in the regression analysis could occur if home ranges are estimated or if home ranges are known but vary greatly in size because of habitat fragmentation effects).

d) The regression approach must be able to predict future habitat conditions (for comparison between alternatives in the long term) by including independent habitat variables which estimate habitat conditions in the future.

Analytical Techniques:

a) Using maps or other appropriate methods, estimate values for independent habitat variables within 2-1/8 mile circles (approximates 9,000 acres or maximum home range size of spotted owls) around each owl site.

b) Determine dependent variable values (see Illustration A at the end of this Chapter).

c) Derive a predictive equation to estimate which owl sites have suitable habitat to produce breeding by spotted owls.

Display Technique: Graphically display numbers of owl sites that are predicted to produce breeding pairs for each subpopulation (i.e., Coast Range, Siskiyous, Cascades) if applicable.

Optional Method 2. Probabilistic Approach (Bayes Theorem)

Assumptions/Comments:

a) This approach has been used by the U.S. Forest Service in their analysis of viability of the spotted owl in the Pacific Northwest so it has a track record.

b) A problem with the Bayes approach is that it addresses only one variable affecting owl populations (i.e., the amount of suitable habitat); this differs from the regression approach which addresses numerous possible variables affecting spotted owl populations.

c) Another problem with the Bayes approach is that confidence intervals for the HSI curve cannot be derived.

d) The HSI curve for Oregon spotted owls derived by the Bayes approach (see USFS EIS Supplement) incorporated only data from BLM's Western Oregon Spotted Owl Environmental Analysis (EA); thus, it may be feasible to use the USFS HSI curve to rank BLM owl sites.

e) The Bayes approach does not consider fragmentation of habitat nor stand structure; these variables would be analyzed independently using other techniques described in the USFS EIS Supplement.

f) The Bayes analysis would be conducted at the State Office level, possibly in cooperation with the USFS viability analysis team in Portland; the Western Oregon EA data may be sufficient for this analysis, but if further information is required individual BLM districts would help the State Office to acquire these data.

Analytical Techniques: Refer to USFS EIS Supplement for details.

Display Techniques:

a) Illustrate the Oregon HSI curve derived by the Bayes Theorem (see USFS EIS Supplement).

b) Display the owl sites which fall into various probability classes for continued existence of a well distributed population (see USFS EIS Supplement).

Optional Method 3. Linkage Approach

Assumptions/Comments:

a) Assume that the capability of a site to produce owlets on a sustained basis is related to the amount, distribution (i.e., degree of fragmentation), and stand structure of suitable habitat.

b) To contribute to the potential dispersal of juvenile spotted owls, assume that individual habitat sites must be no greater than 6 miles apart and clusters of at least 3 owl sites no greater than 12 miles apart; assume that linkages between sites are provided by smaller blocks of old growth/mature habitat at least 80 acres and no more than 1 mile apart.

c) The amount and distribution of suitable habitat (old growth and mature forest) required by spotted owls is uncertain pending additional research. Based on research to this date, assume that any of the following mixes may be relevant minimum standards:

- 1300 acres of suitable habitat within a 1.5 mile radius of the habitat site.
- 1300 acres of suitable habitat within a 2.1 mile radius of the habitat site.
- 2200 acres of suitable habitat within a 1.5 mile radius of the habitat site.
- 2200 acres of suitable habitat within a 2.1 mile radius of the habitat site.

d) Assessment of site capability and potential for dispersal will be conducted only for BLM owl sites located in corridors delineated to provide "stepping stone" blocks of suitable spotted owl habitats which

would link the National Forests of the Cascades, the National Forests of the Siskiyous, and the Siuslaw National Forest in the Coast Range. Spotted owl sites located outside corridors will not be considered in the analysis.

Analytical Techniques:

a) Assess site suitability within a 1.5 and 2.1 mile circle or ellipse with the nest tree or approximate location of the nest tree appropriately centered.

b) Determine historic site occupancy and evaluate each habitat site to determine the amount, distribution and stand structure of mature and old growth habitat for each alternative.

c) Based on information determined from b, subjectively assess the capability of each habitat site to produce owlets on a sustained basis.

d) Based on criteria listed under assumption b, assess the adequacy of corridors to provide linkages between USFS owl sites.

e) Conduct the above evaluation for the four habitat mixes listed under assumption c.

Display Techniques: For each alternative, display the number of corridors that would provide adequate linkage between USFS owl sites; also display the number of BLM owl sites within the corridors that would produce young spotted owls on a sustained basis and would meet juvenile dispersal criteria for each alternative (Table 3-W-6); display information separately for the Coast Range, the Siskiyous, and the Cascades, if applicable.

Optional Method 4. Arithmetic Approach (BLM Western Oregon Spotted Owl EA approach)

Assumption: Assume that maintenance of 1,300 to 3,100 acres of old growth and mature forest within a 1.5 or 2.1 mile radius around owl nesting areas is the major determinant of owl breeding success.

Analytical Technique: Count acres of old growth and mature forest within the 1.5 and 2.1 mile radius of the nest tree or nest grove for each owl site.

Display Techniques:

a) Graphically display the number of owl sites that meet the 2,200 acreage requirement for the range of alternatives.

b) Discuss changes with reference to maintenance of viable management pairs and their ability to contribute biologically to the overall spotted owl population.

c) Display information separately for the Coast Range, the Cascades, and the Siskiyous, if applicable.

Subquestion IV

What method should be used to predict the amount of potential bald eagle breeding sites at the end of 10 and 100 years for each alternative and how this relates to population levels of bald eagles?

Assessment Method

"Potential breeding site" approach.

Assumptions:

a) All existing bald eagle sites will be managed according to current management direction (based on Endangered Species Act requirements) for each alternative.

b) Coordination between all involved Federal and State agencies in each recovery zone to select potential habitat.

Analytical Techniques:

a) Identify all potential bald eagle nesting and winter roosting habitat for the various alternatives. Definitions for nesting and winter roosting habitat are provided in the *Pacific Bald Eagle Recovery Plan.* Nesting habitat includes uneven-aged, multi-storied stands (mature and old-growth) with some old-growth components (in the form of some large, tall, old-growth trees) within 0.5 miles of water.

b) Map potential bald eagle nesting and winter roosting sites that meet the guidelines of the Recovery Plan after consultation with affected agencies and landowners.

c) Evaluate effects of the various alternatives based on the number of potential bald eagle breeding and winter roosting sites that would be maintained under each alternative in relation to goals established by the Recovery Plan.

d) Compare potential bald eagle nesting and roosting sites determined for each alternative with the requirements of the Recovery Plan.

Table 3-W-6 – Number of BLM-managed corridors and owl sites[a] providing linkage between USFS owl sites

	Analytical Assumptions							
	1300 ac.-1.5 mi.[b]		1300 ac.-2.1 mi.[c]		2200 ac.-1.5 mi.[d]		2200 ac.-2.1 mi.[e]	
Alter.	# Corridors	# Owl Sites	# Corridors	# Owl Sites	# Corridors	# Owl Sites	# Corridors	# Owl Sites

[a]Owl sites are located within the corridors. They meet criteria for sustained production of spotted owls (see assumption "a" under Linkage approach) and meet juvenile dispersal criteria (assumption "b" under Linkage approach).

[b]Retention of at least 1300 acres of old growth and mature habitat within a 1.5 mi. radius of the habitat site.

[c]Retention of at least 1300 acres of old growth and mature habitat within a 2.1 mi. radius of the habitat site.

[d]Retention of at least 2200 acres of old growth and mature habitat within a 1.5 mi. radius of the habitat site.

[e]Retention of at least 2200 acres of old growth and mature habitat within a 2.1 mi. radius of the habitat site.

Display Techniques: Display the number of potential bald eagle nesting and winter roosting sites that will be maintained, and the number of required sites to meet Recovery Plan targets for each alternative.

Subquestion V

What method should be used to predict future levels of dead and down woody material (in the absence of empirical data on the current situation)?

Assessment Method

Assumptions:

a) Natural stands (unlogged), on the average, represent maximum potential for species using downed logs. The average amount of downed log habitat is 60 tons/acre (range from 35 to 85 tons/acre).

b) Areas logged (clearcut) during the 1970s and 1980s represent minimal habitat values due to history of gross yarding, growth of the chip market, and development of increased fire management expertise.

c) Areas logged (clearcut) prior to 1970 should generally have more habitat than post-1970 logging (see b above).

d) Mortality salvage, commercial thinning, and partial cutting have less impact than clearcutting.

Analytical Techniques:

a) Data development

Step 1 – Tally all acres of natural stands, stands clearcut during the 1970s and 1980s, areas clearcut prior to 1970, all commercially thinned acres, all mortality salvaged acres, and all partial cut acres. Enter tallies in Table 3-W-7 (Column 2).

Step 2 – Using the expertise of local reforestation, fire management and cruising personnel, etc., estimate tonnage of residual downed logs for each of the categories listed in Step 1. Enter estimates in Column 3 as % of the 60 ton median for unlogged stands.

Step 3 – For analysis of future situations, enter tons per acre objective (Column 3) for residual downed logs for clearcuts made in 1990 and later. (Express as decimal proportion of 60 ton median for unlogged stands.)

Step 4 – Multiply acreage figures (Column 2) by factors (Column 3).

Step 5 – Sum (Column 2).

Step 6 – Sum results of factor (Column 4).

Step 7 – Divide sum of factors (Column 4) by sum of acres (Column 2) and convert to %. The % calculated = index to log-dependent species.

b) Data analysis

Computed index values are compared with standards in the AMS Animals section. Using those standards, the area analyzed for log habitat would be:

"Optimal" if index value is 60 percent or large
"Good" if index value is 40 to 59 percent
"Fair" if index value is 20 to 39 percent
"Minimal" if index value is less than 20 percent

Table 3-W-7 – Analysis of Dead and Down Wood Material

Col.1	Col. 2	Col. 3	Col. 4
Stand Category	**Acres**	**Index Factor**	**Product (Col. 2 x Col. 3)**
Unlogged		100%	
Commercially Thinned			
Mortality Salvaged			
Partial Cut			
Clearcut (Prior to 1970)			
Clearcut (1970-1990)			
Clearcut (after 1990)			
	Total		Total

Analysis

Sum Col. 4 / Sum Col. 2 = Index

Subquestion VI

What method should be used to estimate impacts on other wildlife species (all wildlife except big game species, cavity-users, northern spotted owl, bald eagle, peregrine falcon):

Assessment Methods

Approaches are proposed that would predict the composition, distribution, and condition (i.e., stand structure and whether it would be affected by intensive forest management practices) of habitat within geographic analytical units to be designated (e.g., resource areas or watersheds) at the end of 10 and 100 years for each alternative, and how this relates to changes in habitat conditions.

The two approaches outlined below assume that by maintaining all possible habitats in appropriate amounts, distribution and condition or by maximizing habitat diversity (as measured by the edge index), BLM would contribute to maintenance of viable levels of all wildlife species. This does not preclude featured species management

Preferred Method. Ecosystem Management (Mature, Old Growth Emphasis) Approach

Assumptions:

a) Maintenance of all possible habitats (in appropriate amounts, distribution, and condition) contributes to the viability of all wildlife species in the planning area.

b) Conifer and hardwood stands will be available in adequate amounts, distribution, and condition to sustain viable population levels.

c) Ninety percent of the peripheral vegetation is maintained one sight distance wide around wet and dry meadows, cliffs/talus slopes, and other wetlands (bogs, swamps, marshes, and ponds).

d) Minimum habitat diversity requirements will be met if 15% of BLM-administered lands are retained in mature and old growth forests (estimate from BLM Western Oregon biologists).

Analytical Techniques:

a) Determine the desired habitat composition. Select mature and old growth percentages at levels to ensure contribution to at least minimally viable populations of dependent species. Determine actual acreage of riparian, other wetland (bog, swamp, marsh, pond, wet meadow), dry meadow, cliffs, and talus slopes. Determine other conifer acreages by seral stage, plus hardwood acreages, based on allowable sale quantity runs. Table 3-W-8 is an example of a forest composition level.

Table 3-W-8 – Forest Composition Level (example)

Habitat Type	% of Land Base	
General Forest	90.0	
Old Growth (+200 years)		7.5
Mature		7.5
Late seral stage		24.3
Mid seral stage		24.2
Early seral stage		20.0
Upland Hardwood		5.0
Dry Meadow		1.0
Cliffs/Talus Slopes		0.5
Wetland	10.0	
Riparian		8.0
Bog, Swamp, Marsh, Pond		1.0
Wet Meadow		1.0

b) Determine desired configuration (distribution and amount) of mature and old growth habitat (e.g., maintain habitat in 2-4 mile wide ecosystem corridors consisting of 640-acre large blocks connected by smaller blocks of at least 80 acres no more than 1 mile apart; or maintain old growth/mature stands in areas designated for 350-year rotations).

c) Evaluate habitat composition, distribution, and condition of habitat under each alternative and compare with desired composion, distribution, and condition.

d) Analyze effects based on deviations of estimated habitat composition, distribution, and condition from desired habitat composition, distribution, and condition.

Display Techniques: Display habitat composition for each alternative using bar graphs (see Fig. 3-W-1). Rate probable changes in habitat condition subjectively by use of +/- techniques (see Table 3-W-9). Ratings will be made according to the following subjective criteria:

++	Greatly improved
+	Improved
0	None or negligible
-	Declining
—	Greatly declining

Ratings for Table 3-W-9 reflect the composite effects of impacts on habitat composition, distribution, and condition (see Table 3-W-10).

Alternative Method

Habitat Diversity (edge index) Approach used by Thomas et al., 1979.

Assumptions/Comments:

a) The method, considered separately, does not maximize numbers of a particular species.

b) A mix of management for habitat diversity (species richness) and featured species management is feasible, however, and will probably preclude the loss of any species while insuring desired yields of the featured species.

c) The calculation of the edge index for short-term (10 years) and long-term (100 years) effects will be difficult because the amount and locations of induced edges will be hard to predict without long range timber harvest plans.

Analytical Techniques:

a) Select four representative watersheds for analysis.

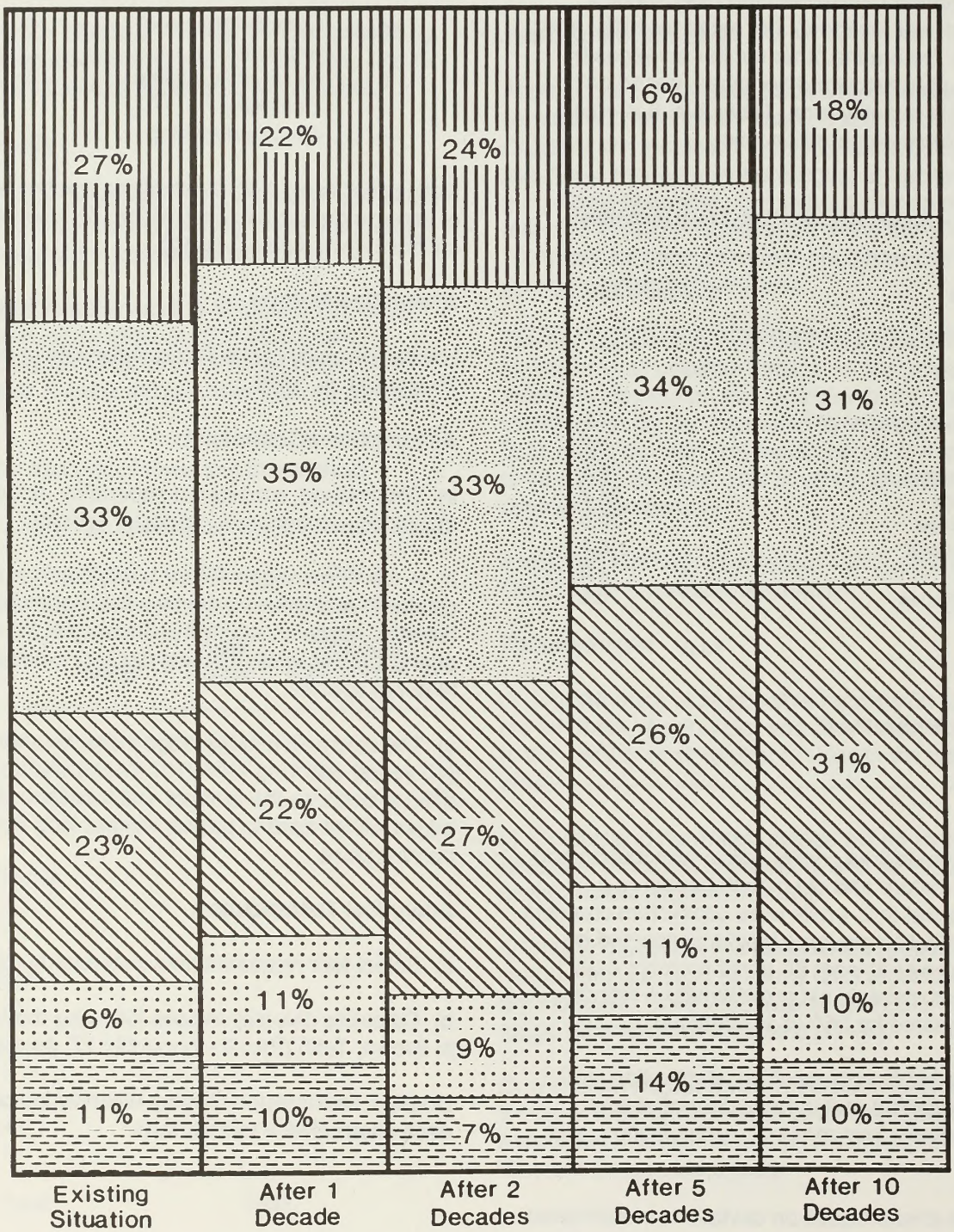
b) Calculate diversity indices following methods listed in Brown, 1985 (Part II - Appendix 17, pp. 240-241).

Display Technique: Display diversity indices for each alternative in tabular form.

Figure 3-W-1

ALTERATION OF WILDLIFE HABITAT ON BLM-ADMINISTERED FOREST LAND

ALTERNATIVE 1



AGE SYMBOL

Table 3-W-9 – Amount of Wildlife Habitat and Changes In Habitat Condition[1] on BLM-Administered Lands During Next Five Decades (partial example)

Habitat Component	Existing Acres	Optimal Acres	Existing Condition	Alt.1	Alt. 2	Alt. 3	Alt. N
Early Seral Stage			Minimal	-	-	-	+
Mid Seral Stage			Good	-	-	-	+
Late Seral Stage			Good	-	-	-	+
Mature			Good	-	+	+	+
Old-Growth			Good	-	-	-	0
Upland Hardwood			Poor	0	0	0	0
Riparian			Poor	—	0	-	++
Habitat Diversity			Fair	-	-	0	+

+ = Improving - = Declining 0 = None or negligible

[1]Condition ratings reflect the composite effects of impacts on habitat composition, distribution, and stand structure (see Table 3-W-10).

Table 3-W-10 – Primary Criteria for Determining Levels of Change in Wildlife Habitat Condition During the Next Five Decades (example)

	Existing Situation		Changes in Acreage and Conditions			
Habitat Type	Acres	Habitat Condition	Alt. 1	Alt. 2	Alt. 3	Alt. N
Early Seral Stage						
Acreage	25200		40000	35400	35200	23800
Habitat Composition		Minimal	-	-	-	0
Habitat Distribion		Poor	+	+	+	+
Stand Structure		Minimal	—	-	-	+
Mid Seral Stage						
Acreage	26000		38000	30000	29000	27000
Habitat Composition		Good	-	-	-	0
Habitat Distribution		Good	+	+	+	+
Stand Structure		Minimal	—	—	-	+
Late Seral Stage						
Acreage	53000		65000	57000	56000	54000
Habitat Composition		Good	+	—	+	0
Habitat Distribution		Good	+	+	-	+
Stand Structure		Minimal	—	-	+	+
Mature						
Acreage	10900		4900	14000	11000	23100
Habitat Composition		Good	-	+	+	++
Habitat Distribution		Minimal	-	+	+	+
Stand Structure		Good	0	0	0	0
Old Growth (200+)						
Acreage	27300		60	7900	12900	15200
Habitat Composition		Good	—	—	-	-
Habitat Distribution		Minimal	-	-	-	+
Stand Structure		Good	0	0	0	0
Upland Hardwood						
Acreage	5900		5300	5300	5300	5300
Habitat Composition		Minimal	-	-	-	-
Habitat Distribution		Minimal	0	0	0	0
Stand Structure		Good	0	0	0	0
Riparian						
Acreage	6700		0	6700	5800	10900
Habitat Composition		Minimal	—	0	-	+
Habitat Distribution		Fair	—	0	-	+
Stand Structure		Minimal	—	-	-	++
Habitat Diversity		Fair	-	-	0	

+ = Improving - = Declining 0 = None or negligible

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Assessing Effects on Recreation

Analytical Question

What assessment method will be used to determine how implementation of each alternative would affect recreation visitation?

Assessment Method

Analyze each alternative and the accompanying analysis of effects on other resources (such as wildlife, water and visual resources) to determine how recreation visitation to BLM lands might be affected. Document these determinations through a matrix display of possible changes. Provide a narrative explaining why changes would occur.

Assumptions:

a) The way public lands are managed has an effect on the types and distribution of recreation opportunities and on overall public visitation levels.

b) Factors which affect recreation visitation are:

- Facilities, including camping and picnicking sites, boat ramps, trails, overlooks, signs and interpretive displays.
- Access, including both physical access (roads, trails) and legal access (easements) to public land recreation resources.
- Wildlife habitat, including habitat to support quality hunting of big and small game and fishing for anadromous and resident trout.
- Landscape quality, including botanical, zoological and geologic features. Specific elements include old growth forests, visual corridors along major transportation routes and opportunites for wildlife viewing.
- Others

c) BLM's role in accommodating recreation visits will continue to involve provision of recreation sites and trails and resource-dependent, dispersed recreation opportunities.

Analytical Techniques: For each alternative, summarize how each of the factors above would affect recreation visitation.

Display Techniques

Display separate tables as shown in Tables 3-REC-1 and 3-REC-2 for short-term and long-term consequences unless those consequences differ only slightly.

Table 3-REC-1 – Short-Term Changes in Visitation to Management Area

Area	Existing Visitation (Number Annually)	Changes in Visitation by Alternative (+, -, 0)			
		Alt. 1	Alt. 2	Alt. 3	Alt. N
X SRMA					
Y SRMA					
A ERMA					
B ERMA					

Table 3-REC-2 – Short-Term Changes in Visitation by Recreation Activities

Activities	Existing Visitation (Number Annually)	Changes in Local Use Levels by Alternative (+, -, 0)			
		Alt. 1	Alt. 2	Alt. 3	Alt. N
Hunting					
Fishing					
Camping/ Picnicking (Developed Sites)					
Hiking/ Riding					
Other					

Assessing Effects on Mineral Values

Analytical Question

What assessment method will be used to determine how the RMP alternative would impact the exploration for and development of mineral resources?

Preferred Method

The analysis will use a narrative, tables, and individual alternative summaries to show how many acres of the available mineral base are affected by the alternatives. In the narrative, note that the procedures for approving plans of operation and the regulations and laws for managing mineral activities are not expected to change as a result of implementing any of the alternatives. Describe elements that will change, including the ways withdrawals and restrictions limit mineral resource development.

For each alternative, provide a brief description of the effects on mineral resources by comparing it to the no-change alternative. Specifically identify any differences in acres for both withdrawals and high restrictions. Discuss any significant issues. Identify any high potential areas that would be affected.

If necessary, develop an additional table to describe any effects related to unique situations such as these: areas of critical mineral potential, known geothermal resource areas, known geological structures, known coal leasing areas, areas of critical environmental concern, or wilderness proposals. Summarize the tables and the individual alternative descriptions, identifying which alternatives are most and least restrictive to mineral development.

Alternative Method

Use Tables 3-M-1 and 3-M-2, but delete the mineral potential column in Table 3-M-1 and the classified prospectively valuable column in Table 3-M-2. In addition, prepare two tables similar to 3-M-1 and 3-M-2, but list the acres for the preferred alternative only.

Display Techniques: Use Tables 3-M-1 and 3-M-2.

Table 3-M-1 – Non-Energy Mineral Restrictions[1] and Acres and Percentages of Land With Low to High Mineral Potential That are Closed or Restricted by the Alternative[2]

Restriction	Mineral Potential	Alt. 1 Ac. %	Alt. 2 Ac. %	Alt. N Ac. %
CLOSED[3] or Withdrawn	High Moderate Low/ Unknown			
OPEN[4] With High Restrictions	High Moderate Low/ Unknown			
OPEN[5] With Low to Moderate Restrictions	High Moderate Low/ Unknown			

[1]Includes all salable and locatable minerals but not leasable.
[2]Acres shown to the nearest 1,000 acres.
[3]Includes all areas officially designated as being closed to mineral entry or sale. Examples are campgrounds, wilderness areas, and wild and scenic river corridors.
[4]Includes withdrawals or other resource values which significantly constrain but do not prevent mineral entry or sale. Examples are powersite withdrawals, off-road vehicle closures, archeological sites, areas of critical environmental concern, and critical habitat of threatened and endangered species. Special stipulations would be required to assure protection of other resource values.
[5]Includes all of the remaining lands available for development which would be protected by standard stipulations.

Table 3-M-2 – Energy Mineral Restrictions and Acres and Percentages of Land Identified as Prospectively Valuable for Energy Minerals that will be Affected by Restrictions or Closures[1]

Restriction	Classified Prospectively Valuable	Alt. 1 Ac. %	Alt. 2 Ac. %	Alt. N Ac. %
CLOSED[2] Nondiscre-tionary	Oil and Gas Geothermal Coal			
CLOSED[3] Discre-tionary	Oil and Gas Geothermal Coal			
OPEN[4] Moderately to Highly Restricted	Oil and Gas Geothermal Coal			
OPEN[5] Low Restriction	Oil and Gas Geothermal Coal			

[1]Acres shown to the nearest 1,000 acres.
[2]Includes those closures or withdrawals designated by Congress, which the Bureau has no authority to change.
[3]Includes those closures, withdrawals, or no-leasing areas which were designated by the Bureau and which the Bureau has the authority to change.
[4]Includes areas where maximum resource protection is emphasized and where special stipulations would be used. Examples are no surface occupancy, seasonal restrictions, restrictions to protect threatened and endangered species, or restrictions to protect visual quality.
[5]Includes areas where exploration and development would be allowed with minimal constraints.

NOTE: Omit from the table those minerals (oil & gas, coal, geothermal) for which no lands in the planning area have been classed as prospectively valuable.

Assessing Effects on Socioeconomic Conditions

Analytical Question

What assessment method should be used to determine effects on socioeconomic conditions?

Subquestion I

What will be the effect on employmment and personal income in the planning area and in western Oregon?

Preferred Assessment Method

Assumption: Spending by residents for fishing, hunting and other recreation in the regional economy tends to be a fixed component of income. Changes in recreation opportunities cause a shift between activities or sites, keeping spending on recreational pursuits in the economy the same.

Analytical Techniques: The effect on employment and personal income will be estimated using the IMPLAN model to cover the planning area and the IPASS model to cover western Oregon. The IPASS model has been developed by Oregon State University for the Oregon Department of Forestry, to permit dynamic simulation of effects from Federal land use plans on the Oregon economy.

Two regions will be analyzed for each planning area: a region composed of counties in the district, and a region composed of all the counties in western Oregon. Respending of O&C county revenue will be included.

The cumulative effect of the preferred alternative will be displayed based on the western Oregon region. Timber supplies from the major public suppliers will be based on the preferred alternatives in the most recent plans proposed by the National Forests and BLM districts. Private and state timber supplies will also be included based on the most recent inventory information available from the PNW Research Station, USFS. Harvest levels of all forest land ownership classes will be estimated using the Local Market Model from the PNW Research Station, USFS. Harvest levels will be input to the IPASS model, which treats the Portland area as being outside of the region.

Alternative Assessment Methods

1. The Regional Input-Output Modeling System (RIMS II) is available from the Bureau of Economic Analysis, U.S. Department of Commerce. It is a county-based system using national data. Typically, RIMS II is updated to reflect two-year-old economic data. This system does not permit the user to directly generate the model from an on-site computer terminal. While the RIMS II results would presumably be similar to IMPLAN, IMPLAN has been used for previous BLM and USFS plans in western Oregon.

2. Another model which could be used is under development by the Oregon State University, College of Forestry. This model uses data from several years' labor market observations to estimate employment and wages using econometric methods.

3. The USFS IMPLAN model could be used for the western Oregon analysis. Its primary disadvantage relative to IPASS is that it does not estimate how the economy would change over time; it estimates the end result only.

Subquestion II

What will the effect be on supply and price of timber?

Assessment Method

Assumption: Harvests from National Forests will be at the level specified for the preferred alternatives in the most recent draft or final Forest Plans.

Analytical Technique: The Local Market Model will be used to simulate the timber supply and profit maximizing behavior on the part of the forest industry. The model is under development by the PNW Research Station, USFS.

Subquestion III

What is the present value of the timber management program under each alternative?

Assessment Method

Assumption: A real interest rate of four percent.

Analytical Techniques: The present net value will be computed for each alternative using both no change in timber prices, and a one percent annual increase in timber prices. Only costs and revenues of the timber program will be included. Revenues and costs for a fifty-year period beginning with implementation of the plan will be discounted to the date of plan implementation. Timber prices will be based on 1984-88 average sale levels for BLM. All price, cost and interest levels will be net of overall inflation in the economy.

Subquestion IV

What will be the effect on community stability?

Assessment Method

Assumption: The overall change in Oregon's economy will be as shown in the annual *Oregon Economic Forecast* prepared by the Executive Department of the State of Oregon.

Analytical Techniques: The effect on community stability will be viewed from the effect on employment and personal income in the district. Effect on individual local communities will be discussed in more general terms. Individual local communities most likely to be affected by BLM land use decisions will be identified through public input and the knowledge of local BLM staff.

Subquestion V

What will be the effect on O&C receipts distributed to the counties?

Assessment Method

Assumptions:

1. The average BLM timber sale price for 1984 to 1988 will be the average sale price in the 1990s.

2. Timber values will remain constant in real terms (net of inflation).

Analytical Technique: The amount of revenue shared with each O&C county will be estimated for each alternative.

Analysis of Cumulative Effects

Cumulative effects analysis will be accomplished, as appropriate to each environmental impact topic, at one or more of the following three levels:

- analytical watershed
- planning area (normally districtwide)
- regional (most commonly, all of western Oregon, but the region in some analyses could be larger or smaller

Specific techniques for addressing cumulative effects are often identified in the preceding specific analytical techniques guidance.

Proposal for the Development of a Reproductive Viability Regression Model for the Northern Spotted Owl

The proposed analysis and model development is based on the assumption that the availability of specific habitats influences a pair's ability to reproduce. The arrangement and abundance of the various habitat types will ultimately have a significant influence on a pair's ability to survive and reproduce, due to the various amounts of food (i.e., prey) found in each of these different habitats. Presently, the relationship between owl breeding success and the arrangement and abundance of habitats is not clearly understood, and the proposed model may help to clarify the problem and provide a means of evaluating each spotted owl site based on the availability of habitat.

The regression model that follows is only a proposal. The contractor would examine the dependent and independent variables to determine their utility, and may choose to add, drop, or modify these variables. The regression analysis will likely be done using the MAXR program within the SAS package. The generated model will be used to evaluate each owl site based on its ability to contribute reproductively to the overall viability of the owl population in western Oregon.

The independent variable data used in the initial analysis should be based on sites where there is a minimum of three consecutive years of diligent site monitoring and, where available, preferably based on five to six years of monitoring, and only where the BLM Western Oregon spotted owl monitoring protocol has been followed.

The final model used by each District will be based on a statistically determined number of variables, and not the nineteen initally proposed for model development.

Dependent Variables Used in Regression Analysis

1. Annual productivity/occupancy from each owl site where the BLM Western Oregon monitoring protocol has been followed. The numerical rating for each site is as follows:

1 - historical site or previously occupied site with no owls present
2 - single bird present, male or female
3 - two birds present, male and female with no verified pair formation or historical breeding occurring
at site
4 - pair present (occupied breeding territory as determined by Postupalsky, 1974), male and female,
with historical breeding documented for site
5 - pair present with breeding verified (active nest as defined by Postupalsky, 1974)
6 - successful nest site, with one fledgling produced
6.5 - successful nest site, with two fledglings produced
7 - successful nest site, with three fledglings produced

2. Average productivity/occupancy from each owl site where the BLM Western Oregon monitoring protocol has been followed (using the same rating system listed above)

3. Mean percent occupancy at site after arc-sine transformation (Zar, 1974).

Independent Variables used in Regression Analysis

Within a 0.6 and 2.1 mile radius of the nest tree or approximate location of the nest tree measure the following variables:

Seral Stages

1. Acres of old growth which is optimal prey base habitat (i.e., optimum flying squirrel habitat).

2. Acres of old growth selectively cut, a special case for the Medford District.

3. Acres of mature habitat (minimum age to be determined by each district).

4. Acres of second growth (ages 45 to mature as defined by each district); i.e., minimum flying squirrel habitat (based on field study in the Roseburg District).

5. Acres of second growth (ages 20-45); i.e., minimum dusky-footed woodrat habitat (based on field study in the Roseburg District).

6. Acres of clearcut/sapling habitat (ages 0-20).

Riparian Habitat

7-10. Miles of streams by stream order (2nd, 3rd, 4th, and 5th order and above); i.e., potentially optimum bushy-tailed woodrat habitat (based on field study in the Roseburg District).

and/or

11. A cumulative value reflecting the quality of riparian habitat. The quality of habitat increases with increasing stream order. To obtain the cumulative value, multiply the miles of 2nd order streams by 1.0, 3rd order by 2.5, and 4th order and above by a rating of 4.0, and then sum all values within the spotted owl site (within both the 0.6 and the 2.1 mile radii).

Intraspecific Competition

12. Distance to closest adult spotted owl pair.

13. Average distance to closest adult spotted owl pairs.

14. Number of adult spotted owl pairs within a 3.0 mile radius of nest tree.

Arrangement of Habitat/Effects of Fragmentation

15. Fragmentation index between old growth/mature and clearcut/sapling habitat (i.e., calculate the amount of edge).

16. Fragmentation index between old growth/mature and second growth habitat.

17. Number of contiguous old growth blocks (100-199 acres) within the 0.6 and 2.1 mile radii.

18. Number of contiguous old growth blocks (200-299 acres) within the 0.6 and 2.1 mile radii.

19. Number of contiguous old growth blocks (300 acres and above) within the 0.6 and 2.1 mile radii.

Problems to consider in analysis and implementation of model:

1. Potential multicollinearity beeen various variables, e.g.:

a. between 1 and 2
b. between 4 and 5
c. between 7 through 11
d. between 12 and 13
e. between 15 and 16
f. between 17 through 19.

Chapter 4: Guidance for Expressing Consistency With Natural Resources Related Plans, Programs or Policies of Other Agencies

Reviewer's Guide

The Federal Land Policy and Management Act (FLPMA) requires that we: (1) coordinate plans with local, state and other Federal planning efforts; and (2) provide consistency with other agency plans to the extent practical under Federal law, regulation and policy. The purpose of this chapter is to provide a uniform approach for districts to follow in determining plan consistency and in documenting these conclusions in the RMP EIS.

Questions To Consider In Public Comments: *We would be particularly interested in your responses to the following questions:*

- *Is the list of agencies, etc. whose plans will be considered in the analysis of consistency, complete?*
- *Are all relevant plans identified?*

Introduction

Consistency and coordination with other agency laws, regulations and officially approved or adopted natural resource related plans, programs and policies will be described in a brief narrative within the "BLM Planning and Resource Interrelationships" Section of the RMP/EIS. This section will be subdivided into Federal Agencies, State and Local Governments, and Tribal Plans and Treaties.

Federal Agencies

In a series of brief narratives, with appropriate cross-references to other RMP/EIS chapter sections and tables, address the consistency of the alternatives with the following Federal entities and their officially approved or adopted plans, programs or policies.

U.S. Department of Agriculture
- Forest Service – Forest-wide land use plans
- Animal and Plant Health Inspection Service – Pest management including noxious weeds
- Soil Conservation Service – Soil surveys and watershed plans

U.S. Department of the Interior
- Fish and Wildlife Service – Recovery Plans for bald eagles, peregrine falcons, etc.
- Park Service – National Rivers Inventory and related review procedures

U.S. Department of Defense
- U.S. Army Corps of Engineers – Applicable project specific recreation plans and navigable river (Sec. 404) permits

U.S. Department of Energy
- Bonneville Power Administration – Tentative Forecast, Transmission System Facilities
- Federal Power Commission – Power site withdrawal reviews
- Northwest Power Planning Council – Northwest Power Plan, Columbia River Basin Fish and Wildlife Program

State Government

In a series of brief narratives, with cross-references to the RMP/EIS chapter sections and tables, address the consistency of the alternatives with the following State of Oregon agencies and their officially approved or adopted plans, programs or policies.

Forestry Department
- Forestry Program for Oregon (instead of a narrative, display in a table to be formatted in consultation with ODF after completion of the revised Forestry Program for Oregon and displayed in the EIS consistency appendix).
- Oregon Forest Practices Act rules

Oregon Department of Agriculture
- Weed control plans (as applicable)
- State-listed endangered plant species plans

Water Resources Department
- River basin programs (8)
- Water Resources Commission rules and statutes

Department of Transportation, Parks and Recreation Division

- Statewide Comprehensive Outdoor Recreation Plan
- Oregon State Parks and Recreation System Plan
- Oregon State Recreation Trails Plan
- Oregon State Historic Preservation Program
- State designated Scenic Waterways
- Oregon Beach Law

Department of Fish and Wildlife (instead of a narrative, display in a table (see Table 4-1) addressing all of the topics listed below):

- Oregon Statutory Wildlife Policy ORS 496.012
- Big game population management objectives
- Spotted owl management program
- Non-game wildlife program
- Wild fish policy
- Coho, Steelhead and Trout plans
- Snowy plover plan
- Fish and Wildlife Habitat Protection Criteria for forest lands
- State-listed endangered animal species plans

Oregon Department of Environmental Quality

- (Federal) Clean Water Act and Statewide Water Quality Management Plan including quality standards and guidelines
- Smoke Management Plan
- Visibility Protection Plan and air quality policies
- Prevention of Significant Deterioration requirements

Economic Development Department

- Regional Economic Development Strategy

Division of State Lands

- Stream removal-fill program
- Natural Heritage Program

Oregon Department of Land Conservation and Development

Oregon Land Conservation and Development Commission (LCDC) statewide land use planning goals will serve as the analytical foundation for documenting consistency with both statewide planning goals, LCDC acknowledged (approved) county and city-wide comprehensive plans, and the Oregon Coastal Management Program. The applicable LCDC goals will be displayed, by number, with a brief description opposite appropriate discussions or analysis (see following example Table 4-2).

For LCDC goals 1 and 2, the "discussion" will focus on coordination and consultation. Discussions of goals 4, 5, 6, 7, 8, 9, 13, and 19 should be modeled after previous Oregon BLM RMPs and timber management EISs, and stress the qualitative differences and quantitative trends of "conformance" as we review the entire spectrum of alternatives. Specific numeric inputs-outputs and other environmental consequences should be adequately displayed in the EIS Environmental Consequences chapter and summarized in the first section of the EIS, and should not be reiterated in this table. The LCDC goal consistency table should cross-reference the EIS tables by number.

Specific issue or planning concern topics should be tied to the most appropriate LCDC goal whenever appropriate. For example, common RMP Issue No. 9, "Recreation Resources," should be linked to LCDC Goal No. 8 (Recreation needs), while employment and resource use receipts to counties from BLM programs may best be linked to LCDC districts Goal 9 (Economy of the State). Goals 3, 16, 17 and 18 may not be applicable to all districts' RMPs. Goals 10, 11, 12, 14 and 15 are not expected to apply to any district. Goal 19 applies to all districts through BLM programs for protection and enhancement of anadromous fisheries.

Oregon Coastal Management Program

A separate but closely related analysis of consistency with the Oregon Coastal Management Program should be prepared for each plan. It must be prepared in conformance with 15 CFR 930 and will be officially reviewed by the Oregon Department of Land Conservation and Development. All appropriate State of Oregon agencies will review the coastal zone consistency determination based on the mandatory enforceable policies of Oregon's coastal management program. Publishing it in the RMP/DEIS will allow public review and will facilitate cross-references to program or resource specific environmental consequences.

Local Comprehensive Plans

A brief narrative on RMP alternative consistency with county (and any applicable city) comprehensive plans should follow the LCDC Goal and Coastal Management Program sections. It should note any inconsistencies between RMP alternatives and county plans that might affect RMP implementation. The LCDC goal table should identify any known inconsistencies between RMP alternatives and county plan features tied to specific LCDC goals. Each district's RMP should note all counties, or portions of counties, with which consistency must be measured. County planning staffs should be encouraged to identify in writing to all appropriate District Managers any potential county plan constraints or expectations from BLM management and RMP decisions, including access needs, community expansion opportunities, community rock pits, recreation plans, etc.

Tribal Plans and Treaties

Separate narrative discussions of any relevant tribal plans, programs or policies or treaty interests should be included after consultation with appropriate tribal leaders.

Table 4 - 1 – Consistency of the Proposed Action and Alternatives With State of Oregon Wildlife Plans and Protection Criteria

State Plan/Statute	Basic Objective	Proposed Action and Alternatives			
		Consistent	Minimally Consistent	Inconsistent	Discussion
State Big Game Population Management Objectives	Develop, restore and/or maintain big game (along with associated recreational, aesthetic and commercial opportunities and benefits) at the level identified in 1980 as the planning target level by game management unit. This is accomplished through hunting season regulation and implementation of multiple-use management practices on public lands that tend to stabilize the cover-forage relationship in space and time, provide for a wildlife emphasis in management of sensitive wintering areas, and offer habitat improvement opportunities.				
State Nongame Wildlife Plan	Maintain populations of naturally occurring Oregon nongame wildlife at self-sustaining levels within natural geographic ranges in a manner which provides for optimum recreational, aesthetic, economic, ecological, scientific and cultural benefits, and where possible, is consistent with primary uses of lands and waters of the state.				
State Snowy Plover Plan (Draft)	Restore the snowy plover breeding and wintering populations along the Oregon Coast and to maintain populations at known locations east of the Cascades.				
ODFW Fish and Wildlife Habitat Protection Criteria for Forest Lands	Encourage perpetuation of the naturally occurring mix of habitat types, and plant communities in sufficient amounts adequately distributed to maintain wildlife species in compliance with Oregon's Nongame Wildlife Plan ORS 635-100-001 through 635-100-03. The criteria also include habitat guidelines for Federal and State Threatened and Endangered Species.				

Table 4 - 1 – Consistency of the Proposed Action and Alternatives With State of Oregon Wildlife Plans and Protection Criteria (continued)

State Plan/Statute	Basic Objective	Proposed Action and Alternatives			
		Consistent	Minimally Consistent	Inconsistent	Discussion
State Spotted Owl Management Plan	Maintain a minimum of 400 nesting pairs of northern spotted owls throughout their range in Oregon, with 2,200 acres of old-growth forest habitat provided for each pair.				
Oregon Forest Practices Act Rules	Establish minimum standards which encourage and enhance the growing and harvesting of trees while considering and protecting other environmental resources such as air, water, soil, and wildlife.				
Oregon Revised Statute 496.012	Maintain all species of wildlife at optimum levels and prevent the serious depletion of any indigenous species. Develop and manage the lands and waters of this state in a manner that will enhance the production and public enjoyment of wildlife. Develop and maintain public access to the lands and waters of the State and the wildlife resources thereon. Regulate wildlife populations and public enjoyment of wildlife in a manner that is compatible with primary uses of the lands and waters of the State and provide optimum public recreational benefits.				
State Wild Fish Policy	Protect and enhance wild stocks.				
State Coho, Steelhead and Trout Plans	Maintain and enhance production, escapement, and harvest.				
Oregon Threatened and Endangered Species Act Policies	Protect and conserve wildlife species that are determined to be threatened or endangered.				

Table 4 - 2 – Relationship of Alternatives to County Comprehensive Plans as They Incorporate and Reflect Statewide Land Conservation and Development Goals[1] (example)

LCDC Statewide Goal Number and Description	Discussion
1. To ensure citizen involvement in all phases of the planning process	BLM's land use planning process provides for public input at various stages. Public input was specifically requested in developing issues and planning criteria, the preferred alternative, other alternatives, and analysis techniques described in the RMP/EIS. Public input will continue to be utilized in the environmental analysis process and development of the final RMP.
2. To establish a land use process and policy framework as a basis for all decisions and actions.	The preferred alternative and other alternatives have been developed in accordance with the land use planning process authorized by the Federal Land Policy and Management Act of 1976 which provides a policy framework for all decisions and actions.
4. To conserve forestlands for forest uses.	The planning area has significant commercial forestland and woodlands. Alternative _, _, _ and _ would increase wood products production. Alternative _ would retain current management direction with no change in timber harvest levels. The other alternatives could cause a reduction in timber harvest levels but would protect other forest values.
5. To conserve open space and protect natural and scenic resources.	Natural and visual resources were considered in the development of the preferred alternative and other alternatives. Forest management, under the preferred alternative and other alternatives would impact open space as well as natural and visual resources. Adverse impacts to visual resources, wildlife habitat and unique natural areas are greatest under Alternatives _ and _ and least under Alternatives _ and _ where natural values are emphasized.
6. To maintain and improve the quality of the air, water and land resources.	The Federal and State water quality standards would be met and water quality would be maintained and/or improved under all alternatives. Burning of logging slash under all alternatives would have a slight temporary effect on air quality at upper atmospheric levels. All alternatives would comply with the statewide Smoke Management Plan.
7. To protect life and property from natural disasters and hazards.	Natural hazard areas, particularly floodplains and areas with highly erosive soils have been identified. All alternatives provide for appropriate management of natural hazard areas. Bureau authorized developments within natural hazard areas will be minimal under each alternative, with project construction engineering reflecting local conditions.
8. To satisfy the recreational needs of the citizens of the State and visitors.	The BLM actively coordinates its outdoor recreation and land use planning efforts with those of other agencies to establish integrated management objectives on a regional basis. Under the preferred alternative and all other alternatives, opportunities would be provided to meet recreation needs. The quantity of recreational opportunities would be greatest under Alternatives _, _ and _. The quality of certain types of recreational opportunities would be greatest under Alternatives _, _, _, _ and _.

Table 4 - 2 – Relationship of Alternatives to County Comprehensive Plans as They Incorporate and Reflect Statewide Land Conservation and Development Goals[1] (continued)

LCDC Statewide Goal Number and Description	Discussion
9. To diversify and improve the economy of the State.	Alternatives _, _, _ and _ would induce economic stability or gains in the long term through timber harvesting production, and anadromous fish habitat enhancement. This would result in a slightly improved local and state economy. Alternatives _ through _ would provide lesser benefits through greater diversity of recreation opportunities and similar anadromous fish habitat enhancement, but diminished timber production.
11. To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.	Public lands may be available for rural or urban development following a Bureau land sale or exchange, if the action would be permitted under the local government comprehensive plan and ordinances.
12. To provide and encourage a safe, convenient and economical transportation system.	All alternatives provide for continuation of, and either expansion of or new linear and aerial rights-of-way for powerlines, pipelines, communications facilities, roads and other public purposes. The availability of BLM lands is greatest for these potential uses in Alternative _ and decreases through Alternative _.
13. To conserve energy.	Conservation and efficient use of energy sources are objectives in all BLM activities. Sale and harvest of minor forest products (e.g., posts, poles, firewood) from woodlands and noncommercial forest areas is permitted in most areas.

[1]Statewide goals 3,10, 14, and 19 are not applicable to any District. Goal 15 is only applicable to the Salem and Eugene Districts. Goals 16, 17 and 18 may be applicable to small portions of the Salem and Coos Bay Districts.

Chapter 5: Guidance for the Executive Summary

Reviewer's Guide

To assist review of draft plans, as well as provide an overview of the five RMP/EISs for interested parties, an executive summary will be published. The acreage figures provided for management practices will be estimates derived from the 10-year representative timber management scenarios.

***Questions To Consider In Public Comments:** We would be particularly interested in your response to the following question:*

- *Do the proposed contents of the executive summary indicate that it will provide the information that is of most interest to you?*

Outline of Executive Summary

The Executive Summary will contain a cover page, table of contents, map of western Oregon, tables highlighting selected data (See Tables 5-1, 5-2 and 5-3) and brief narratives of the following:

I. Overview of Alternatives Considered

   A. Common Alternatives.
   B. Alternatives unique to individual districts
   C. Subalternatives of the preferred alternative.

II. Description of Preferred Alternatives, Including the Preferred Subalternatives

   A. Timber Production Practices
      1. Lands available for intensive management of timber or for restricted management to enhance other uses on BLM or nearby lands.
      2. Silvicultural systems.
      3. Logging practices.
      4. Description of the following practices:
         a. Precommercial thinning.
         b. Commercial thinning.
         c. Fertilization.
         d. Brushfield/hardwood conversion.
         e. Genetics.
         f. Site preparation (manual, mechanical, burning, herbicides).
         g. Vegetation control (manual, mechanical, herbicides).
         h. Animal damage control (pesticides, trapping, tubing).
      5. Planned harvest age.
      6. Departure from even flow (if appropriate).
   B. Old Growth Forests
      1. Where and how much maintained.
   C. Habitat Diversity
      1. Management of unique habitats.
   D. Threatened and Endangered Species Habitat
      1. Management of Federally listed plants and animals.
      2. Management to prevent Federal listing of sensitive species.
   E. Special Areas
      1. ACECs (including RNAs).
         a. existing
         b. potential
      2. Other (including WSAs).
   F. Visual Resources
   G. Watershed Mangement
      1. Special management actions to comply with state water quality standards.
      2. Management for municipal, domestic, irrigation, and other uses.
   H. Streams/Riparian Areas
      1. Management emphasis.
      2. Areas and sites designated and/or managed to protect or enhance recreational opportunities.
      3. Wild and Scenic Rivers (designated and recommendations).
   J. Land Tenure.
   K. Air Quality.
   L. Cultural Values.
   M. Minerals Resources.
   N. Other Resources or Issues Unique to Individual Districts.

III. Summary of Decision Rationale
   A. Socio-economic Aspects
   B. Biological Aspects
   C. Consideration of Public Inputs

IV. Monitoring

V. Consistency with State, Local, Tribal, and other Federal Plans
   This discussion will focus on areas of perceived inconsistencies.

VI. Public Involvement
   A. Past
   B. Future Opportunities

Note: Each district will also prepare a summary of their Draft Resource Management Plan (DRMP) and Draft Environmental Impact Statement (DEIS). Included in the summary will be a "User's Guide" to the documents. The User's Guide outlines what the reader will find in the various chapters and appendices of the DRMPs amd DEISs. Copies of all these documents will be available at the public libraries and BLM offices in Lakeview, Klamath Falls, Medford, Coos Bay, Roseburg, Eugene, Salem, Tillamook, and Portland.

Table 5 - 1 – BLM Administered Public Lands in Western Oregon (Acres)

District	O&C Lands	CBWR Lands	Public Domain	Other[1]	Total
Salem					
Eugene					
Roseburg					
Medford					
Lakeview[2]					
Coos Bay					
Total					

[1]Acquired and Railroad Grant Lands.
[2]Covered in the Medford RMP.

Table 5 - 2 – Economic Comparison of Alternatives

Effect	Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Allowable Sale Quantity (MMBF)							
Local Employment Dependent on Timber Production (number of jobs)							
Local Employment Dependent on Commercial and Sport Fishing (number of jobs)							
Local Payroll Dependent on Timber (millions of dollars)							
Local Payroll Dependent on Commercial and Sport Fishing (millions of dollars							
Average O&C Disbursements to Western Oregon Counties (millions of dollars)							

Table 5 - 3 – Land Use or Resource Allocations on BLM Administered Lands, Western Oregon

Allocation/Practice	Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
1. Intensive Timber Production							
A. Intensive Timber Production (acres)							
B. Silvicultural Systems (acres)							
• Even Aged							
• Uneven Aged							
C. Logging Practices (acres)							
• Ground							
• Cable							
• Aerial							
D. Cultural Practices (acres)							
• Pre-commercial Thinning							
• Commercial Thinning							
• Fertilization							
• Brushfield/Hardwood Conversion							
• Planting with regular stock							
• Planting with genetically improved stock							
• Site Preparation (manual, mechanical, burning, herbicides)							
• Vegetation Control (manual, mechanical, herbicides)							
• Animal Damage Control (pesticides, trapping, tubing)							
E. Allowable Sale Quantity (MMBF)							
2. Habitat Diversity/Old-Growth							
A. After 10 years (acres)							
• young forest							
• mature forest							
• old-growth fores							
B. After 100 years (acres)							
• young forest							
• mature fores							
• old-growth forest							
3. Threatened and Endangered Species Habitat							
• Management To Prevent Federal Listing of Sensitive Species (narrative)							
4. Special Areas							
A. ACECs (acres)							
• Existing retained							
• Potential added							
B. Other							

Table 5 - 3 – Land Use or Resource Allocations on BLM Administered Lands, Western Oregon (continued)

Allocation/Practice	Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
5. Visual Resources (acres of each VRM class)							
6. Watershed Management (narrative) A. Special Management Actions To Comply withState Water Quality Standards B. Management for Municipal, domestic, irrigation, and other uses							
7. Riparian Management Areas (widths by stream order and acres)							
8. Recreation Resources A. Sites (number and acres) B. Wild and Scenic Rivers (miles recommended for addition) • Wild • Scenic • Recreational C. Road Closures (miles) D. ORV Designations (acres) • Open • Limited • Closed							
9. Land Tenure Adjustments • Public Lands identified for disposal via exchanges or sales under Sec. 203 of FLPMA (acres)							
10. Mineral Resources • Acres withdrawn or proposed for withdrawal from mining claim location • Acres closed to mineral leasing							
11. Other Resources Unique to Individual Districts							

Chapter 6: Guidance for Use of the Completed Resource Management Plan

Reviewer's Guide

This chapter provides general guidance for the annual monitoring of plan implementation actions, and the less frequent process of evaluating the success of the actions in meeting the plan's objectives and the correctness of these objectives. It also guides the maintenance of the plan, particularly the incorporation into the plan of subsequently acquired lands. It establishes criteria for when to consider amending each plan.

Questions To Consider In Public Comments: *We are particularly interested in your responses to the following questions:*

- *Does the proposed guidance adequately define the way each district will develop a monitoring plan for its preferred alternative?*

- *Does the proposed guidance provide adequate criteria to help the districts determine when to consider amending their plan?*

Plan Monitoring, Maintenance and Evaluation

The BLM planning regulations (43 CFR 1610.4-9) call for monitoring and evaluating resource management plans at appropriate intervals. The purposes of monitoring the RMP are to:

1) Be sure activities are occurring in conformance with the plan.

2) Determine if activities are producing the expected results.

3) Determine if activities are causing the effects identified in the EIS.

Each RMP will contain a monitoring plan that describes the standards, methods, and intervals for monitoring and evaluating the RMP. Specific activities or resources to be monitored will be identified after the proposed RMP is defined. Minimum monitoring standards will be the key components for RMP implementation (for example, the allowable sale quantity offering), and resources that could be significantly affected, such as water quality in a municipal watershed.

Figure 6-1, Process for Changing the RMP, shows how monitoring could lead to a revision in design features or to other changes to the RMP.

After implementation of the new plans, it is expected to be at least two years before substantial on-the-ground activity under their guidelines will occur. In addition to routine monitoring, formal evaluation of each plan will be conducted shortly after the end of both the third and the fifth year it is in effect, to determine whether there is significant cause to amend or revise it. Evaluation is a cumulative analysis of monitoring records, with the broader purpose of determining if the decisions made to meet plan goals and objectives were fully effective, and whether the goals and objectives were correct and achievable in the first place. Among the specific criteria to be considered in these evaluations are the following:

- Have average annual acres of intensive management practices or average annual timber sale volume deviated from that expected in the plan to such a degree that a deviation of more than 10 percent in programmed sale volume for any sustained yield unit (SYU) for the decade is anticipated? (Ten percent is defined as the threshold for revision because it represents the approximate accuracy of the timber inventory data used in the allowable sale quantity calculation.)

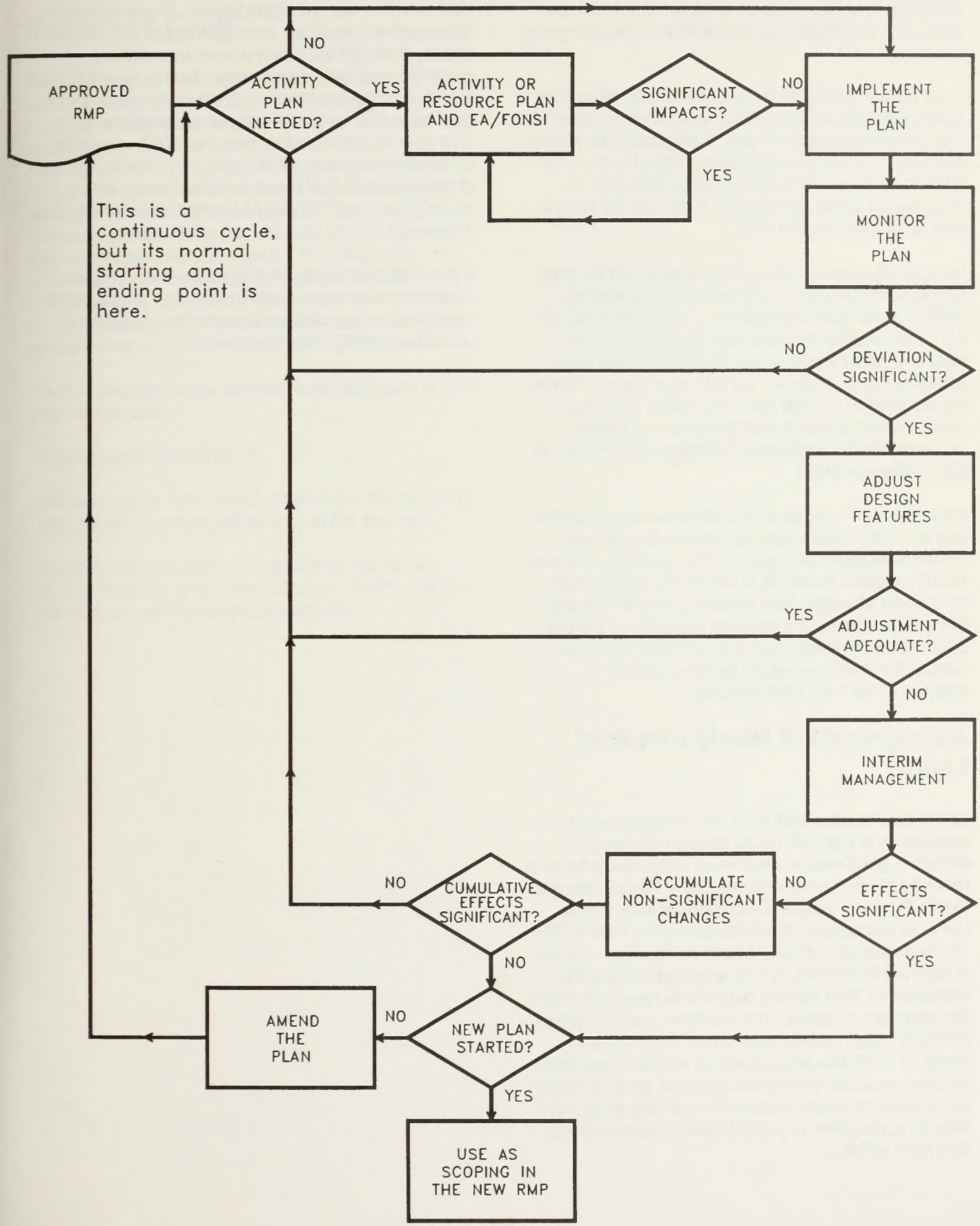
- Is reforestation occurring approximately as planned, or is a backlog developing of such magnitude that an allowable sale quantity change of more than 10 percent would be called for if the trend were expected to continue for the balance of the decade?

- Have TPCC acreage shifts made during timber sale planning led to a net change that would modify the allowable sale quantity for any SYU by more than 10 percent?

- Do the combined effects of any changes identified above indicate that the allowable sale quantity should be modified by more than l0 percent?

- Have changed circumstances (including new information or changes in the plans of other government agencies or Indian tribes) so altered the amount or method of timber harvest or the expected impacts of harvest or other activities, that the environmental consequences of the selected alternative may differ substantially from those anticipated in the RMP/EIS?

FIGURE 6-1
PROCESS FOR CHANGING THE RMP



Determining where the parameters of expected environmental consequences have been substantially changed will be done by establishing a threshold related both to the reliability of relevant predictions, and to the significance of the particular environmental consequences.

If the answer to any of these questions is affirmative, a plan amendment or revision may be considered. An analysis will be prepared and, if amending the plan is appropriate, the amendment process set forth in 43 CFR 1610.5-5 or 1610.5-6 would be followed. If amendment is not appropriate, it may still be necessary to supplement the EIS.

No additional evaluations of this type would be done unless some unusual event called the continuing validity of the plan into question. Evaluations would not be conducted after the start (publication of a Notice of Intent to revise the Plan/EIS) of the next scheduled plan revisions (on a 10-year cycle). Following completion of each plan evaluation, a program summary will be distributed to interested parties, summarizing the evaluated findings and the status of plan implementation.

Potential new management actions which are identified after RMP/ROD approval should be reviewed before BLM takes any actions. For example, if a new ACEC proposal meets BLM criteria for consideration, the District Manager may prescribe interim management measures for the balance of the life of the plan. Such interim management should follow the objectives of the RMP and would become subject to analysis in the next RMP process.

Management of Newly Acquired Lands

Lands may come under BLM administration after completion of the RMP/ROD through exchange, donation, purchase, revocation of withdrawals to other federal agencies or relinquishment of Recreation and Public Purpose leases. Discretionary acquisitions (such as exchanges) are to be guided by RMP/ROD "lands acquisition criteria" based on resource values of high public interest. Newly acquired lands will be managed for their highest potential purpose for which the lands are acquired. For example, lands acquired within "special management areas" with Congressional or RMP allocation/direction will be managed in conformance with guidelines for those area. If lands with unique or fragile resource values are acquired, it may be appropriate to protect those values until the next plan revision.

Lands acquired without identified special values or management goals would be managed in the same manner as comparable BLM lands. This implies typical timber harvest opportunities, intensive timber management practices, management of the mineral estate, standard operating procedures and pre-committed mitigation measures. Exchanges of lands resulting in net adjustments in the commercial forest land base may be made without adjusting the allowable sale quantity or amending the RMP, unless the cumulative effects of all changes identified in this chapter indicate that the decadal allowable sale quantity for any SYU should be modified by more than 10 percent.

If the RMP specifically identifies areas or resource values for acquisition, it should provide management objectives and guidelines showing how these lands would be administered if acquired.

Chapter 7: Glossary

Reviewer's Guide

Preparation of an RMP/EIS requires use of many technical terms and phrases. This glossary is not intended to substitute for a dictionary. It provides standard definitions of many technical terms and phrases, so they will be used consistently in district planning documents for common understanding by interested readers. It is not intended for this glossary to include terms relevant to only one district. Districts may add locally relevant terms to the glossaries published in their individual RMP/EISs. Additional common terms may also be added as the RMP/EISs are being written. BLM manuals and many published sources were used in developing this glossary.

The following principles applied to development of this proposed glossary:

- *Keep it reasonably brief.*
- *When in doubt, leave it out; if needed in the planning documents, it can be added later in the process.*
- *Don't define two essentially similar terms, for example, "canopy" and "forest canopy." Define the one we want to use in planning documents.*

Glossary of Terms

Activity Plan – A site-specific plan for the management of one or more resources (for example a Habitat Management Plan).

Age Class – One of the intervals into which the age range of trees is divided for classification or use.

Airshed – A term denoting a geographical area, the whole of which, because of topography, meterology, and climate, shares the same air mass.

Allotment – An area of land where one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other federal managed, state owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Allowable Cut Effect (ACE) – The immediate increase in today's allowable sale quantity which is justified by expected future increases in yields due to present or proposed management treatments.

Allowable Sale Quantity (ASQ) (formerly referred to as "allowable cut") – The amount of timber volume that may be sold annually or periodically from a specified area over a stated period in accordance with the decisions of a decadal plan.

Allowable Sale Quantity (ASQ) Determination Process – The development and evaluation of alternative levels of timber production for the purpose of establishing an allowable sale quantity.

Anadromous Fish – Fish that migrate as adults from the ocean into fresh water streams to reproduce young fish that migrate to the ocean to grow to maturity.

Analysis of the Management Situation (AMS) – A comprehensive display of physical resource data and an analysis of the current use, production, condition and trend of the resources and the potentials and opportunities within a planning area.

Analytical Watershed – For planning purposes, a drainage basin subdivision of the planning area used for analyzing cumulative impacts on water resources.

Animal Damage – Injuries inflicted upon forest tree seed, seedlings, and young trees through seed foraging, browsing, cutting, rubbing, or trampling; usually by mammals, but sometimes birds.

Animal Unit Month (AUM) – The amount of forage necessary for the sustenance of one cow or its equivalent for one month.

Aquatic Habitat – Habitat that occurs in free water.

Archeological Site – A cultural resource containing material remains of prehistoric and/or historic human activity.

Area of Critical Environmental Concern (ACEC) – An area within the public lands where special management attention is required (if such an area is developed or used, or where no development is permitted) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes or to protect life and safety from natural hazards (FLPMA Sec. 103(a)). (Also see Potential ACEC).

Area of Critical Mineral Potential (ACMP) — An area identified by the public to have significant mineral potential. Significant, in this case, means that the mineral resources are important to the local, regional, or national economy, or could become important in the future.

Aspect – The direction a slope faces.

Automated Resource Data (ARD) – Computerized mapped and alpha-numeric coded data utilized in the planning and management of resources for which geographic information systems provide the primary processing and analysis technology.

Available Forest Land – The commercial and woodland forest land base available for planned timber harvest after all legal, economic and multiple use considerations are determined and assessed through the Bureau land use planning process.

Average Employment – The sum of number of employees, reported monthly, divided by twelve; because employment is reported for all employees working during any one month, it is a modest over-estimate of full-time equivalent employment.

Background Distance Zone – The visible area of a landscape which lies beyond the foreground-middleground. Usually from a minimum of 3 to 5 miles to a maximum of about 15 miles from a travel route, use area, or other observer point. Atmospheric conditions in some areas may limit the maximum to about 8 miles or less.

Background Levels – Amounts of pollutants present from natural sources and from human disturbances which have reached equilibrium.

Baseline – The starting point for analysis of environmental consequences; may be the conditions at a point in time (e.g., when inventory data is collected) or may be the average of a set of data collected over a specified period of years.

Bedload – Sediment moving on or near the streambed and frequently in contact with it.

Beneficial Use – The reasonable use of water for a purpose consistent with the laws and best interest of the peoples of the state. They include instream, out of stream and groundwater uses but are not limited to: domestic, municipal, industrial water supply, mining, irrigation, livestock watering, fish and aquatic life, wildlife, fishing, water contact recreation, aesthetics and scenic attraction, hydropower, and commercial navigation.

Best Management Practices (BMP) – A practice or combination of practices determined by a State, after problem assessment, examination of alternative practices, and appropriate public participation, to be the most effective and practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of water pollution generated by nonpoint sources to a level compatible with water quality goals.

Big Game – Large mammals, some of which are hunted, e.g., Roosevelt elk, black-tailed deer, black bear; others, such as the endangered Columbian white tailed deer, are fully protected.

Board Foot (BF) – A unit of solid wood, one foot square and one inch thick.

Broadcast Burning – A controlled fire which burns within well defined boundaries for reduction of fire hazard, as a silvicultural treatment, or for wildlife habitat improvement.

Bureau Sensitive Species – Plant or animal species not in any of the categories of Proposed, Candidate or State Listed but determined by the State Director to be threatened or endangered throughout their range or threatened or endangered within the State of Oregon.

Cadastral Survey – A survey that creates, marks, defines, retraces, or reestablishes the boundaries and subdivisions of public land.

Candidate Species – Those plants and animals included in Federal Register "Notices of Review" that are being considered by the Fish and Wildlife Service (FWS) for listing as threatened or endangered. There are two categories that are of primary concern to BLM. These are:

CATEGORY 1. Taxa for which the FWS has substantial information on hand to support proposing the species for listing as threatened or endangered. Listing proposals are either being prepared or have been delayed by higher priority listing work.

CATEGORY 2. Taxa for which the FWS has information to indicate that listing is possibly appropriate. Additional information is being collected.

Cavity Excavator – A species that digs or chips out cavities in wood to provide itself or its mate with a site for nesting, roosting, or foraging.

Cavity Nesters – Wildlife species that nest in cavities.

Characteristic Landscape – The established landscape within an area being viewed. This does not necessarily mean a naturalistic character. It could refer to an agricultural setting, an urban landscape, a primarily natural environment, or a combination of these types.

Clearcut Harvest – An even aged method of timber harvest in which all trees (merchantable and/or unmerchantable) are simultaneously cut from the stand with the intent to establish a new crop of seedlings. As defined, clearcut harvest can take place in both virgin and previously entered stands.

Climax Plant Community – The vegetative community that emerges after a series of successive vegetational stages and perpetuates itself indefinitely unless disturbed by outside forces.

Clone – A group of genetically identical plants derived asexually from a single individual.

Coastal Oregon Productivity Enhancement Program (COPE) – A cooperative research and education program to identify and evaluate existing and new opportunities to enhance long-term productivity and economic/social benefits derived from the forest resources of coastal Oregon.

Commercial Forest Land – Forest land that is now producing or is capable of producing at least 20 cubic feet of wood per acre per year of commercial tree species.

Commercial Thinning – Partial cuttings made in merchantable timber stands in order to increase merchantable yield by redistributing growth and salvaging existing and expected mortality.

Commercial Tree Species – Conifer species used to calculate the commercial forest land ASQ. They are typically utilized as sawtimber and include species such as Douglas fir, hemlock, spruce, fir, pine and cedar. Hardwoods and other minor conifer species typically utilized for non-sawtimber purposes may be sold under a suitable woodland ASQ.

Commodity Resources – Goods or products of economic use or value.

Community Stability – Orderly change within the capacity of a community (incorporated town or county) to absorb and cope with the change without major hardship to institutions or groups within the community.

Community Water Supply System – A domestic water supply source or distribution system which serves more than three single residences or other users for the purpose of supplying water for household uses, but is neither a municipal water supply system nor a public utility water supply system.

Concern – A management or public "concern" that is not well enough defined to become a planning issue, or does not involve controversy or dispute over resource management activities or land use allocations or lend itself to designating land use alternatives. A concern may be addressed in analysis, background documents, or procedures or in a noncontroversial decision.

Constrained Timber Production Base – Acreage managed for timber production at less than full intensity in consideration of non-timber resource management objectives, e.g., extended rotations (harvest ages) for wildlife habitat (see Intensive Timber Production Base).

Contrast – Opposition or unlikeness of different forms, lines, colors, or textures in landscape.

Contrast Rating – A method of analyzing the potential visual impacts of proposed management activities.

Coos Bay Wagon Road (CBWR) Lands – Public lands granted to the Southern Oregon Company and subsequently reconveyed to the United States.

Core Area – That area of habitat essential in the breeding, nesting and rearing of young; up to the point of dispersal of the young.

Cover – Vegetation used by wildlife for protection from predators, or to ameliorate conditions of weather, or in which to reproduce; fish cover may consist of deep water, undercut banks, submerged logs, or overhanging vegetation.

Critical Habitat – The geographic area occupied by a threatened or endangered species plus specific areas outside the geographic area that have been published in the Federal Register and are considered by the FWS to be essential to the conservation of a listed species.

Crucial Habitat – Habitat which is absolutely basic to maintaining viable populations of fish, wildlife, or plants during certain seasons of the year or specific reproduction periods; a portion of the habitats of sensitive species that if destroyed or adversely modified could result in their being listed by a State agency or legislature as threatened or endangered pursuant to Section 4 of the Endangered Species Act or in some category implying endangerment.

Cryic Temperature Regime – A soil temperature regime having a mean annual temperature between 32° and 47° Farenheit.

Cubic Foot – A unit of solid wood, one foot square and one foot thick.

Cull – A tree or log which is not harvested because it does not meet certain merchantable specifications.

Culmination of Mean Annual Increment (CMAI) – The age at which the annual increment of growth in a forest stand reaches the maximum.

Cultural Modification – Any human-caused change in the land form, water form, vegetation, or the addition of a structure which creates a visual contrast in the basic elements (form, line, color, texture) of the naturalistic character of a landscape.

Cultural Resource – Any definite location of past human activity identifiable through field survey, historical documentation, or oral evidence; includes archaeological or architectural sites, structures, or places, and places of traditional cultural or religious importance to specified groups whether or not represented by physical remains.

Cultural Site – Any location that includes prehistoric and/or historic evidence of human use or that has important sociocultural value.

Cumulative Effect – The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Debris Avalanche – Rapid downhill movement of saturated, relatively unconsolidated soils and debris.

Debris Torrent – A very fluid mass of soil, rock and vegetative debris that moves rapidly down stream channels.

Departure (from even flow) – A timber sale level which deviates from the principle of nondeclining sale levels through a planned temporary increase or decrease in the allowable sale quantity, usually in the beginning decade(s) of the planning horizon. To be selected a departure from even flow must be economically and biologically justified.

Design Features – Practices that are standard for the actions contemplated under each alternative.

Designated Area – An area identified in the Oregon Smoke Management Plan as principal population center requiring protection under state air quality laws or regulations.

Developed Recreation Site – A site where recreation facilities are constructed to accommodate site-specific recreation use.

Dispersed Recreation – Outdoor recreation in which visitors are diffused over relatively large areas. Where facilities or developments are provided, they are more for access and protection of the environment than for the comfort or convenience of the people.

Distance Zones – A subdivision of the landscape as viewed from an observer position. The subdivision (zones) includes foreground-middleground, background, and seldom seen.

Diversity – A measure of the variety of species and habitats in an area that takes into account the relative abundance of each species or habitat.

Domestic Water Supply – Municipal, public utility, community, or public water supply.

Early Seral Stage – The time period in the life of a forest stand from disturbance (natural or man-caused) until canopy closure (when crown cover approaches 100 percent).

Easement – A right held by a person or entity to make use of the land of another for a limited purpose, as right of passage.

Ecological Niche – The place or position that a particular plant or animal occupies in the ecosystem with regard to its interactions with other organisms and the utilization of its environment.

Ecosystem – An interacting natural system including all the component organisms together with the nonliving environment.

Edge Effect – The increased diversity or abundance of flora and fauna occurring in the transition zone where two plant communities or successional stages meet and mix.

Endangered Species – Any species published in the Federal Register as in danger of extinction through all or a significant portion of its range.

Environmental Assessment (EA) – A systematic analysis of site-specific BLM activities used to determine whether such activities have a significant effect on the quality of the human environment and whether a formal environmental impact statement is required.

Environmental Impact – The positive or negative effect of any action upon a given area or resource.

Environmental Impact Statement (EIS) – A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major Federal action.

Established Stand – A reforestation unit which consists of suitable trees which are growing and are past the time when considerable juvenile mortality occurs. They are no longer in need of measures to ensure survival but are evaluated for measures to enhance growth.

Even-Aged Management – Using either clearcut or shelterwood harvest systems to establish new stands of trees that are about the same age. Generally, age differences between individual trees within a unit do not exceed 10 to 20 years.

Even Flow – Maintaining a relatively constant undiminishing supply of timber or other resources from year to year for the planning cycle.

Extensive Recreation Management Areas (ERMAs) – All public lands outside Special Recreation Management Areas that are within a Resource Area. These areas may include developed and primitive recreation sites with minimal facilities.

Federal Register – A daily (weekdays) publication of the National Archives and Records Administration, which provides a uniform system for making available to the public regulations and legal notices issued by Federal agencies.

Final Harvest Cut – Constitutes removal of a mature stand, either through clearcutting, the final stage of a shelterwood regime, or overstory removal.

Forage – All browse and herbaceous foods that are available to grazing animals including wildlife and domestic livestock.

Foraging Area – Used primarily in relation to big game; an opening in a forest, natural or caused by human activity, where wildlife feed on vegetative material.

Foreground-Middleground Distance Zone – The area visible from a travel route. use area, or other observation point to a distance of 3 to 5 miles. The outer boundary of this zone is defined as the point where the texture and form of individual plants are no longer apparent in the landscape. Vegetation is apparent only in patterns or outline.

Forest Canopy – The more or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

Forest Land – Land that is now, or is capable of becoming, at least 10 percent stocked with forest trees and that has not been developed for nontimber use.

Forest Succession – The orderly process of change in a forest as one plant community or stand condition is replaced by another, evolving towards the climax type of vegetation.

Forest Type Island – An aggregation of trees occupying a specific area and sufficiently uniform in composition, age, arrangement and condition to be distinguishable from vegetation on adjoining areas.

Fragile Nonsuitable – A TPCC classification indicating forest land which has inherent fragile conditions, such that timber harvest will result in reduced future productivity, even if special harvest or restrictive measures are applied. These fragile conditions are related to soils, geologic structure, topography, and groundwater. All fragile nonsuitable sites are further classified as nonsuitable woodland.

Full Log Suspension – During yarding operations, suspension of the entire log above the ground.

Gross Yarding – Removal of woody material of specified size from a logging unit to a landing.

Groundwater – Subsurface water in the zone of saturation.

Habitat Diversity – The number of different types of habitat within a given area.

Habitat Effectiveness – Habitat variables integrated in such a way that best explains a species response to a wide range of habitat conditions, e.g., for elk in western Oregon, the interactions between sizing and spacing, road density, cover and forage quality.

Habitat Management Plan – See Activity Plan.

Habitat Niche – The peculiar arrangement of food, cover, and water that meets the requirements of a particular species.

Hiding Cover – Any vegetation capable of hiding 90 percent of a standing adult deer or elk from the view of a human at a distance of 200 feet or less. Generally, any vegetation used by wildlife for security or to escape from danger.

Historic Site – A cultural resource resulting from activities or events dating to the historic period (generally post AD 1830 in western Oregon).

Home Range – The area which an animal traverses in the scope of normal activities; not to be confused with territory.

Impact – A spatial or temporal change in the environment caused by human activity. The change should be (1) perceptible, (2) measurable, and (3) relatable through a change agent to a management activity or alternative.

Improved Seed – Seed originated from a seed orchard or selected tree(s) whose genetic superiority in one or more characters important to forestry has been proven by tests conducted in specific environments. Examples are seed from a clonal or seedling seed orchard, seed from selected tree whose growth rate is better than the average in a progeny test, and seed from disease resistant sugar pine and western white pine.

Indicator Species – A selected species whose welfare is presumed to indicate the welfare of other species or entire biological communities.

Infiltration (soil) – The movement of water through the soil surface into the soil.

Instant Study Area – A natural area formally identified by BLM for accelerated wilderness review, by a notice published before October 21, 1975.

Integrated Pest Management (IPM) – Use of several techniques (e.g. burning, grazing and mechanical, manual or chemical methods) as one system to gain control of animals or plants existing in areas where they are unwanted.

Intensive Forest Management – The practice of forestry to obtain a high level of timber volume and quality through application of the best techniques of silviculture and management.

Intensive Forest Management Lands – All commercial forest land that is part of the timber production land base.

Intensive Timber Production Base – Acreage intensively managed for timber production.

Intermediate Cuttings – Any removal of merchantable trees from a stand prior to the final harvest cutting, i.e., commercial thinning, sanitation/salvage, or shelterwood regeneration cuttings.

Intermittent Stream – A stream which flows most of the time but occasionally is dry or reduced to pools.

Inventory River – A potential wild and scenic river identified in the National Rivers Inventory (NRI) published January, 1982, by the National Park Service. The NRI provides a primary database for potential addition to the National Rivers system for use by Federal and State Agencies, including section 5(d) of the Wild and Scenic Rivers Act which sets forth the mandate for studying potential rivers in the course of planning for the management and use of the public lands.

Irretrievable – Not replaceable. Applies to losses of production, harvest, or use of renewable natural resources. For example, where production is lost, the action is irretrievable, but not irreversible.

Irreversible – Incapable of being returned to its original state. Applies primarily to the use of nonrenewable resources, such as minerals, or to those factors, such as soil productivity, that are renewable only over long time periods; also includes loss of future options.

Issue – See Planning Issue.

Landing – Any place on or adjacent to the logging site where logs are assembled for further transport.

Landscape Features – The land and water form, vegetation, and structures which compose the characteristic landscape.

Late Seral Stage – The period in the life of a forest stand from attainment of an average stand DBH of 12 inches until the culmination of mean annual increment.

Leaching – The removal of materials in solution from the soil or forest floor.

Leasable Minerals – Minerals which may be leased to private interests by the federal government, including oil, gas, geothermal resources and coal.

Locatable Minerals – Minerals subject to disposal and development by staking mining claims as authorized by the Mining Law of 1872 (as amended). Generally includes metallic minerals such as gold, silver and other materials not subject to lease or sale.

Long Term – The period starting 10 years following implementation of the Resource Management Plan. Used as an analytical time frame, this period extends as long as analysis can predict outcomes.

Long-Term Soil Productivity – The ability of a soil to sustain a nondeclining yield in perpetuity and not lose the potential for the targeted species to be grown at the same stocking level and growth rate after each rotation.

Long Term Sustained Yield (LTSY) – The estimated timber harvest that can be maintained indefinitely over time, once all stands have been converted to a managed state under a specific management intensity.

Lumber and Wood Products, except Furniture – An industrial classification which includes logging contractors engaged in cutting timber and pulpwoods: merchant sawmills, lath mills, shingle mills, planning mills, plywood mills, and veneer mills engaged in producing lumber and wood basic materials; and

establishments engaged in manufacturing finished articles made entirely or mainly of wood or wood substitutes. Certain types of establishments producing wood products are classified elsewhere, e.g., furniture and office and store fixtures are classified in a different classification.

Major Plant Grouping – An aggregation of plant associations with similar management potential with the same late seral or climax dominant species and major early seral species.

Management Activity – A surface disturbing activity undertaken on the landscape for the purpose of harvesting, traversing, transporting, protecting, changing, replenishing, or otherwise using resources.

Management Framework Plan (MFP) – Land use plan that established coordinated land use allocations for all resource and support activities for a specific land area within a BLM district. It also establishes objectives and constraints for each resource and support activity and provides data for consideration in program planning. (This process has been replaced by the Resource Management Planning process.)

Mass Movement – The downslope movement of earth materials caused by gravity. This is an all-inclusive term which includes but is not limited to landslides, rock falls, debris avalanches, and creep. It does not, however, include surface erosion by running water.

Mature Forest – A forest stand in the stage between culmination of mean annual increment and attainment of old-growth forest condition. For purposes of inventory, stands on BLM-administered lands are only identified if ten acres or greater in size.

MICRO-STORMS – A micro-computer data base system providing background information and recommended treatment for each Operations Inventory unit.

Mid Seral Stage – The time period in the life of a forest stand from canopy closure until trees reach an average stand DBH of 12 inches.

Mineral Estate – The ownership of the minerals on the land.

Mineral Potential Classification System – A method for assessing the potential for the presence of a concentration of one or more energy and/or mineral resources as provided by BLM Manual.

Minimum Harvest Age – The lowest age of a stand to be scheduled for final harvest.

Minimum Stocking – The minimum acceptable number of well-spaced trees per acre at time of stand establishment.

Minimum Streamflow and Basin Programs – Programs defining the flow within a stream required to preserve the existing levels of fish, wildlife, other aquatic organisms and related recreational activities.

Mining Claims – Portions of the public mineral lands in which individuals or associations have claimed the right of exclusive possession of locatable mineral deposits, by virtue of location and recording under established rules.

Mitigating Measures – Modifications of actions which (a) avoid impacts by not taking a certain action or parts of an action; (b) minimize impacts by limiting the degree or magnitude of the action and its implementation; (c) rectify impacts by repairing, rehabilitating or restoring the affected environment; (d) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action; or (e) compensate for impacts by replacing or providing substitute resources or environments.

Monitoring – The review on a sample basis, of management practices to determine how well objectives are being met, as well as the effects of those management practices on the land and environment.

Monoculture – The raising of a crop of trees consisting of only one species; such crops are usually even-aged.

Mortality Salvage – See sanitation/salvage cutting.

Multi-layered Canopy – Forest stands with two or more distinct tree layers in the canopy; synonymous with multistoried stands.

Multiple Use – Management of the public lands and their various resource values so that they are utilized in the combination that will best meet present and future needs.

Municipal Watershed – A watershed where surface water is used for domestic purposes through a public water system serving at least 15 service connections or serving at least 25 individuals.

Mycorrhizal Fungi – Fungi which have a symbiotic relationship with the roots of certain plants.

National Ambient Air Quality Standards (NAAQS) – Standards designed to protect public health and welfare, allowing an adequate margin of safety. The NAAQS for particulate matter less than 10 microns in size (PM 10) is 50 micrograms per cubic meter annual average and 150 micrograms per cubic meter, 24 hour average, not to be exceeded more than once per year. National secondary standards and Oregon air quality standards for criteria pollutants (particulates, carbon monoxide, sulfur dioxide, ozone, nitrogen dioxide, hydrocarbons and lead) are similar or more strict.

National Natural Landmark – Areas designated by the Secretary of Interior which contain representative examples of the nation's natural history, including terrestrial communities, aquatic communities, landforms, geological features or habitats of native plant and animal species possessing national significance in illustrating or interpreting the nation's natural heritage.

National Register of Historic Places – A formal list, established by the National Historic Preservation Act of 1966, of the nation's cultural resources worthy of preservation. The Register lists archaeological, historic, and architectural properties (such as districts, sites, buildings, structures, and objects) nominated for the local, State, or National significances by State and/or Federal agencies and approved by the National Register staff. The Register is maintained by the National Park Service.

Nonattainment – Failure of a geographical area to attain or maintain compliance with ambient air quality standards.

Nonattainment Area – A geographical area that has failed to attain or maintain compliance with air quality standards. Nonattainment Area boundaries are commonly the same as city, standard metropolitan statistical area (SMSA) or county boundaries.

Nonchargeable Volume – Timber harvest volumes that were not included in the ASQ calculations.

Noncommercial Forestland – Land which is not capable of yielding at least 20 cubic feet of wood per acre per year of commercial species or land which is capable of producing only noncommercial tree species.

Noncommercial Tree Species – Species whose yields are not reflected in the commercial conifer forest land ASQ. Some of these minor conifer and hardwood species may be managed and sold under a suitable woodland ASQ and therefore may be commercial as a woodland species.

Nonforest Land – Land that has been developed for non-timber uses or land that is incapable of being 10 percent stocked with forest trees.

Nongame Wildlife – All wild terrestrial vertebrates not subject to sport hunting.

Non-point Source Pollution – Pollution caused by the introduction of materials from diffuse sources (e.g., sediment, nutrients), or from a natural or human alteration in the stream system.

Nonsuitable Commercial Forest Land – Sites that would take longer than the required number of years to meet or exceed minimum stocking levels of commercial species. Further classified as suitable woodland.

Nonsuitable Woodland – All fragile nonsuitable forest land.

Noxious Plant – A plant specified by law as being especially undesirable, troublesome and difficult to control.

Nutrient Cycling – The circulation of elements such as nitrogen and carbon, via specific pathways from abiotic to biotic portions of the environment and back again; all mineral and nutrient cycles involving people, animals and plants - such as the carbon cycle, phosphorous cycle, and nitrogen cycle.

Nutrient Depletion – Detrimental changes on a given site in the total amount of nutrients and/or their rates input, uptake, release, movement, transformation or export.

O&C Lands – Public lands granted to the Oregon and California Railroad Company and subsequently revested to the United States.

Obligate Species – A plant or animal that occurs only in a narrowly defined habitat: e.g., tree cavity, rock cave, wet meadow.

Off-Road Vehicle (ORV) – Any motorized track or wheeled vehicle designed for cross-country travel over any type of natural terrain.

Off-Road Vehicle Designation –

Open: Designated areas and trails where off-road vehicles may be operated (subject to operating regulations and vehicle standards set forth in BLM Manuals 8341 and 8343).

Limited: Designated areas and trails where the use of off-road vehicles is subject to restrictions, such as limiting the number or types of vehicles allowed,

dates, and times of use (seasonal restrictions); limiting use to existing roads and trails; or limiting use to designated roads and trails. Under the designated roads and trails designation, use would be allowed only on roads and trails that are signed for use. Combinations of restrictions are possible, such as limiting use to certain types of vehicles during certain times of the year.

Closed: Designated areas and trails where the use of off-road vehicles is permanently or temporarily prohibited. Emergency use of vehicles is allowed.

Old Growth Conifer Stand – A forest growing on western hemlock, mixed conifer, or mixed evergreen sites with the majority or plurality stand species component being Douglas-fir. Generally, co-dominant/dominant trees should reflect the following physical and biological characteristics to qualify as an old growth stand: 1) Stands should possess a multi-layered canopy with trees of several age classes/ species; 2) Standing dead trees (snags) and down log materials are present; 3) Evidence of man's activities may be present, but past activities do not significantly alter the above characteristics and would be a subordinate factor in a description of such a stand. For purposes of inventory, these stands on BLM-administered lands are only identified if at least ten percent stocked with trees of 200 years or older and ten acres or more in size.

Old Growth Dependent – An animal species so adapted that it can exist only in old-growth forests.

Operations Inventory (OI) – An intensive inventory which provides managers with information regarding stand location, size, silvicultural needs, and recommended treatment based on individual stand conditions and productivity.

Oregon Endangered Species Task Force – An Interagency task force represented by ODFW, USFS, BLM, USFWS, and Oregon State University, organized in 1973, to establish habitat management guidelines for Oregon Endangered Wildlife Species. In 1978 it became the Oregon-Washington Interagency Wildlife Committee.

Outstanding Natural Area (ONA) – An area of outstanding scenic splendor, natural wonder or scientific importance that merits preservation in its natural condition. The preservation of these resources in their natural condition is the primary management objective. The public is encouraged to enter the area for recreation purposes.

Overstory Removal – The final stage of cutting (the second cut of a two-stage shelterwood or the third cut of a three-stage shelterwood) where the remaining overstory trees are removed with the intent to release the understory regeneration. Overstory removal is generally accomplished three to five years after artificial reforestation activities and when adequate stocking has been achieved.

Paleontological Resource – Remnants of life from past geological ages as seen in fossil plants and animals.

Partial Cutting – Removal of selected trees from a stand.

Partial Log Suspension – During yarding operations, where only one end of the log is suspended above the ground.

Particulates – Finely divided solid or liquid (other than water) particles in the air.

Peak Flow – The highest amount of stream or river flow occurring in a year or from a single storm event.

Permeability (Soil) – The ease with which gases, liquids, or plant roots penetrate or pass through a bulk mass of soil or a layer of soil.

Perennial (Permanent) Stream – A stream that ordinarily has running water on a year round basis.

Personal Income – The income received by all individuals in the economy from all sources: made up of wage and salary disbursements, proprietors income, rental income of persons, dividends, personal interest income, and the difference between transfer payments and personal contributions for social insurance.

Planning Area – All of the lands within a BLM district boundary; however, BLM planning decisions apply only to BLM-administered lands and mineral estate.

Planning Issue – A matter of controversy or dispute over resource management activities that is well defined or topically discrete, and that can be addressed in the design of planning alternatives.

Plant Community – An association of plants of various species found growing together in different areas with similar site characteristics.

Plantation Release – Any action taken on an established commercial timber stand to control stand composition and promote dominance and/or growth of suitable tree species. Treatments may include mechanical or manual slashing of undesirable brush and tree species, herbicide applications, biological control, or a combination of methods. Forest fertilization is not considered a release treatment.

Plantation Stocking Maintenance – Any management action taken on an unestablished stand to promote the survival and establishment of suitable trees. Treatments may include herbicide applications or manual brushing, manual cleaning, mulching, or a combination of methods.

Pool/Riffle Ratio – The ratio of surface area or length of pools to the surface area or length of riffles in a given stream reach, frequently expressed as the relative percentage of each category. Used to describe fish habitat rearing quality.

Potential ACEC – An area of land administered by BLM which, after review and recommendation by an interdisciplinary team, has been determined by the appropriate BLM District Manager to meet the following criteria:

(1) Relevance. There shall be present a significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard.

(2) Importance. The above described value, resource, system, process, or hazard shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to human life or property.

Precommercial Thinning – An action taken in a nonmerchantable stand of immature trees to control density and growing space, so that growth is concentrated on potential crop trees.

Prehistoric – Refers to a period wherein Native American cultural activities took place which were not yet influenced by contact with historic non-native culture(s).

Prevention of Significant Deterioration (PSD) – Air quality regulations intended to prevent deterioration of air quality in areas that are cleaner than the air quality standards; establish specific increments beyond which air quality cannot deteriorate; establish new source permitting requirements and set aside "pristine" (Class 1) air quality areas for specific protection under the regulations.

Priority Animal Species – Species having special significance for management. They include endangered, threatened and special status species; species of high economic or recreational value; and species of significant public interest.

Priority Habitats – Aquatic, wetland and riparian habitats, and habitats of priority animal species.

Progeny Site – A test area for evaluating parent seed trees by comparing the performance of their offspring seedlings.

Proposed Threatened or Endangered Species – Plant or animal species determined to be biologically appropriate for listing as threatened or endangered and for which a proposed rule has been published in the Federal Register but for which a final rule has not been made.

Prospectively Valuable – A classification of leasable mineral resources based on BLM Manual criteria on mineral occurrence which would suggest that a mineral deposit is both technologically feasible and practicable to develop.

Public Domain Lands – Original holdings of the United Stated never granted or conveyed to other jurisdictions, or reacquired by exchange for other public domain lands.

Raptors – Bird species, such as eagles and hawks, which have adapted to seize prey.

Ravel – Downslope movement of soil particles or small rocks on steeper slopes without flowing water. The particles are dislodged by a combination of gravity, changes in temperature, and wetness and wind, or animals.

Reach – See Stream Reach.

Rearing Habitat – Areas in rivers or streams where juvenile salmon and trout find food and shelter to live and grow for a period of time.

Recovery Plan – A plan for the conservation and survival of an endangered species or a threatened species listed under the Endangered Species Act, for the purpose of improving the status of the species to the point where listing is no longer required.

Recreation Experience Opportunity – The opportunity for a person to realize predictable psychological and physiological outcomes from engaging in a specific recreation activity within a specific setting.

Recreation Management Information System (RMIS) – A data base program containing visitor use and related information used to track the status of the recreation program.

Recreation Opportunity Spectrum (ROS) – A continuum used to characterize recreation opportunities in terms of setting, activity, and experience opportunities. The spectrum contains six classes.

Recreation River – A river or section of a river that is readily accessible by road or railroad, that may have some development along its shorelines, and that may have undergone some impoundment of diversion in the past, which has been designated, as such, as part of the National Wild and Scenic Rivers System.

Red Alder Site – A forest site occupied by red alder and not suitable for the production of conifer species.

Reforestation – Reestablishment of a commercial tree crop on forest land.

Regeneration – The renewal of a commercial tree crop, whether by natural or artificial means; also the young crop itself.

Regeneration Cut – The first cut in a two-stage shelterwood or the second cut in a three-stage shelterwood designed to open up the stand to enable and promote reforestation and subsequent overstory removal without incurring unacceptable damage to new seedlings. The remaining overstory trees are left to modify the ground environment of new seedlings.

Regeneration Period – The length of time it takes to reforest an area from the date of a timber sale until adequate stocking is achieved.

Regulated Forest – A forest which comprises an even distribution of age classes or tree sizes, when the growth equals the cut (at the highest level sustainable) and when the level of growing stock remains relatively constant.

Research Natural Area (RNA) – An area established and maintained for research and education. The general public may be excluded or restricted where necessary to protect studies or preserve research natural areas. Lands may have: (1) typical or unusual faunistic or floristic types, associations, or other biotic phenomena; or (2) characteristic or outstanding geologic, pedologic, or aquatic features or processes.

Reserved Federal Mineral Estate – Property on which the federal government has retained ownership of minerals (and the right to remove the minerals) but the surface estate is private or other ownership.

Resource Management Plan (RMP) – A land use plan as described by the Federal Land Policy and Management Act.

Restricted Forest Management – The management of available forest land areas where forest management is one of the many uses but other resource values are emphasized.

Right–of–Way – A permit or an easement which authorizes the use of public lands for certain specified purposes, commonly for pipelines, roads, telephone lines, electric lines, reservoirs, and so on; also, the lands covered by such an easement or permit.

Riparian Management Area – An area allocated in the plan primarily to protect the riparian and/or streamside zone.

Riparian Zone – Those terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables and soils which exhibit some wetness characteristics. Normally used to refer to the zone within which plants grow rooted in the watertable of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs and wet meadows.

Ripping – The process of breaking up or loosening compacted soil to assure better penetration of roots of young tree seedlings, thus assuring better survival and growth of desirable trees.

Rotation – The planned number of years between the regeneration of an even-aged stand and its final cutting.

Rotational Failure – Failure of a discrete block of soil on a failure plane that is curved from top to bottom and from side to side. The block rotates downward and outward along this failure plane while remaining more or less intact.

Runoff – That part of precipitation, as well as any other flow contributions, which appears in surface streams, either perennial or intermittent.

Salable Minerals – High volume, low value mineral resources including common varieties of rock, clay, decorative stone, sand, and gravel.

Salvage – The dead, dying, or deteriorating woody material removed from the forest and sold.

Sanitation/Salvage Cutting – Removal of individual trees killed or injured by fire, insects, disease, etc. and the removal of those trees likely to die prior to final harvest cut so as to utilize merchantable material.

Sawlog – A log considered suitable in size and quality for producing lumber.

Scarification – Removal of competing vegetation or interfering debris by mechanical means.

Scenic Quality – The relative worth of a landscape from a visual perception point of view.

Scenic River – A river or section of a river that is free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped but accessible in places by roads, which has been designated as such, as part of the National Wild and Scenic Rivers System.

Sediment – Water borne soil, rock particles and organic or other debris.

Sediment Yield – The quantity of sediment, measured in dry weight or by volume, transported in water flowing through a stream cross-section in a given time. Consists of both suspended sediment and bedload.

Seed Orchard – A plantation consisting of clones or seedlings from selected trees, isolated to reduce pollination from outside sources, rogued of undesirables, and cultured for early and abundant production of seed.

Seldom Seen Distance Zone – Portions of the landscape which are generally not visible from key observation points, or portions which are visible but more than 15 miles distance.

Selective Cutting – The periodic removal of trees, individually or in small groups, from an uneven-aged forest in order to realize the yield and establish a new tree crop.

Sensitivity Analysis – A process of examining specific trade-offs which would result from making changes in single sensitive elements of a plan alternative.

Sensitivity Levels – Measures (e.g., high, medium, and low) of public concern for the maintenance of scenic quality.

Seral Stages – The series of relatively transitory plant communities which develop during ecological succession from bare ground to the climax stage.

Shelterwood Cutting – A regeneration method under an even-aged silvicultural system. A portion of the mature stand is retained as a source of seed and/or protection during the period of regeneration. The mature stand is removed in two or more cuttings.

Short Term – The period of time during which the plan will be implemented, assumed to be 10 years.

Silviculture – The art and science of producing and tending a forest.

Silvicultural Prescription – The identified management objectives of a given timber sale area; recognizing the area's physical, biological, and management constraints, it prescribes specific treatments necessary to establish, protect, and maintain the growth and development of new plantations.

Site Class – A forest management term denoting site productivity and measured in productivity classes (e.g., Site Class I - highest productivity).

Site Preparation – Any action taken in conjunction with a reforestation effort (natural or artificial) to create an environment which is favorable for survival of suitable trees during the first growing season. This environment can be created by altering ground cover, soil or microsite conditions, using biological, mechanical, or manual clearing, prescribed burns, herbicides or a combination of methods.

Skyline Yarding – A cable yarding system using one of the cables to support a carriage from which logs are suspended and then pulled to a landing; such systems are capable of yarding for distances up to 4,000 feet.

Slash – The branches, bark, tops, cull logs, and broken or uprooted trees left on the ground after logging has been completed.

Slope Failure – See Mass Wasting.

Smoke Management – Conducting a prescribed fire under suitable fuel moisture and meteorological conditions and with firing techniques that keep smoke impact on the environment within acceptable limits.

Smoke Management Program – A program designed to ensure that smoke impacts on air quality from agricultural or forestry burning operations are minimized; that impacts do not exceed or significantly

contribute to violations of air quality standards or visibility protection guidelines and that necessary open burning can be accomplished to achieve land management goals.

Smoke Sensitive Area – An area identified by the Oregon Smoke Management Plan that may be negatively impacted by smoke but is not classified as a designated area.

Smolt – A young salmon or trout that is migrating from freshwater to the ocean.

Snag – Any standing dead, partially-dead or defective (cull) tree at least 10 inches in diameter at breast height and at least 6 feet tall. A hard snag is composed primarily of sound wood, generally merchantable. A soft snag is composed primarily of wood in advanced stages of decay and deterioration, generally not merchantable.

Snag Dependent Species – Birds and animals that are dependent on snags for nesting, roosting or foraging habitat.

Soil Compaction – An increase in bulk density (weight per unit volume) and a decrease in porosity (particularly macropores) resulting from applied loads, vibration or pressure.

Soil Displacement – The removal and horizontal movement of soil from one place to another by mechanical forces (such as a blade).

Soil Loss Tolerance – The maximum amount of soil loss as expressed in tons/acre/year that can be tolerated and still permit a high level of productivity to be sustained indefinitely.

Soil Productivity – Capacity or suitability of a soil, for establishment and growth specified crop or plant species.

Soil Series – A group of soils developed from a particular type of parent material and having genetic horizons that, except for texture of the surface layer, are similar in differentiating characteristics and in arrangement of the profile.

Special Areas – Areas that may need special management, which may include management as an ACEC, RNA, ONA, environmental education area, or other special category.

Special Recreation Management Areas (SRMA) – Areas where congressionally recognized recreation values exist or where significant public recreation issues or management concerns occur. Special or more intensive types of management are typically needed.

Special Status Species – Plant or animal species falling in any of the following four categories (see separate glossary definitions for each):

- Threatened or Endangered Species
- Proposed Threatened or Endangered Species
- Candidate Species
- State Listed Species
- Bureau Sensitive Species

Species of Special Concern – Those plants that are considered rare within Oregon, but may be common in occurrence within other states and/or there is at present insufficient justification for these plant species to be included on the Sensitive Plant Species list.

Split–Estate – An area of land where the surface is non-federally owned and the subsurface mineral resources are federally owned or vice versa.

Spotted Owl Habitat Sites – Sites monitored by BLM for spotted owl occupancy during some or all of the years 1985 through 1988, in accordance with BLM's spotted owl monitoring guidelines. These sites are known to have been inhabitated by spotted owls at some time in the last dozen years, but not necessarily during the 1985-1988 period.

State Historic Preservation Officer (SHPO) – The official within each State, authorized by the State at the request of the Secretary of the Interior, to act as a liaison for purposes of implementing the National Historic Preservation Act of 1966.

State Implementation Plan (SIP) – A state document, required by the Federal Clean Air Act, which describes a comprehensive plan of action for achieving specified air quality objectives and standards for a particular locality or region within the state, within a specified time period.

State Listed Species – Plant or animal species listed by the State of Oregon as threatened or endangered pursuant to ORS 496.004, ORS 498.026, or ORS 564.040.

Statewide Comprehensive Outdoor Recreation Plan (SCORP) – A plan which describes and analyzes the organization and function of the outdoor recreation system of the State. Prepared by the State, the plan provides an analysis of the roles and responsibilities of major outdoor recreation suppliers; an analysis of demand, supply and needs; issue discussions; an action program to address the issues; and a project selection process.

Stocked/Stocking – Related to the number and spacing of trees in a stand.

Strategic and Critical Minerals – Minerals which supply military, industrial and essential civilian needs of the United States during a national defense emergency and are not found or produced in this country in sufficient quantities to meet such needs. Nickel, cobalt and chromium are examples of such minerals occurring in western Oregon.

Stream Class – A system of stream classification established in the Oregon Forest Practices Act. Class 1 streams are those which are significant for domestic use, angling, water dependent recreation and spawning, rearing or migration of anadromous or game fish. Class 2 streams are: (1) those which have a significant summertime cooling influence on downstream Class 1 streams; or (2) any stream which is not Class 1.

Stream Order – A hydrological system of stream classification. Each small unbranched tributary is a first order stream. Two first order streams join to make a second order stream. A third order stream has only first and second order tributaries, and so forth.

Stream Reach – An individual first order stream or a segment of another stream that has beginning and ending points at a stream confluence. Reach end points are normally designated where a tributary confluence changes the channel character or order. Although reaches identified by BLM are variable in length, they normally have a range of 1/2 to 1-1/2 miles in length unless channel character, confluence distribution, or management considerations dictate variance.

Succession – An orderly, progressive and directional change in the composition of species over time.

Suitable Commercial Forest – Commercial forest land which is determined to be capable of sustained long-term timber production.

Suitable Forest Land – Suitable commercial forest and suitable woodland.

Suitable Tree – A commercial coniferous species, adapted to the site, considered capable of meeting forest management objectives by producing a merchantable product in a reasonable length of time. The tree should not exhibit undue "off-site" characteristics, disease, erratic growth, damage, or poor color.

Suitable Woodland – Forest land occupied by minor conifer and hardwood species not considered in the commercial forest land ASQ determination and referred to as **noncommercial species** (these species may be considered commercial for fuelwood, etc. under woodland management). Also included are **low site**, and **nonsuitable** commercial forest land. These lands must be biologically and environmentally capable of supporting a sustained yield of forest products.

Surface Erosion – The detachment and transport of soil particles by wind, water, or gravity. Surface erosion can occur as the loss of soil in a uniform layer (sheet erosion), in many rills, or by dry ravel.

Survival Cover – Cover required by animals to mitigate effects of a period of severe weather that cannot be met by thermal cover. The objective of survival cover is to provide a forest stand structure which will provide shade during times of high temperatures and intercept snow during severe storms and provide significant quantities of forage in the same stand. Stand closure should be at least 75 percent or more.

Suspended Sediment – Sediment suspended in a fluid by the upward components of turbulent currents or by colloidal suspension.

Sustained Yield – The yield that a forest can produce continuously at a given intensity of management.

Sustained Yield Unit (SYU) – An administrative division for which an allowable sale quantity is calculated.

T Factor – The maximum rate of annual soil erosion that will permit crop productivity to be sustained economically and indefinitely.

Target Stocking – A specific stocking standard which is the goal of BLM reforestation efforts in western Oregon. This standard is designed to obtain the desired number of well-spaced trees per acre at the age of first commercial thinning. Target levels assure that intermediate cuts will be realized through commercial thinning. Minimum stocking standards represent a lower (but acceptable) number of well-spaced trees per acre, but no intermediate cuts are anticipated. Below minimum stocking represents an unacceptable number of trees per acre.

Ten Percent Stocked – Tree seedlings and saplings (0.5 inches in diameter 4.5 feet above the ground) that are well distributed over the land and are more than 30 per acre in number. Or, they are trees larger than 5 inches in diameter with foliage that covers at least 10 percent of the land surface area.

Texture (soil) – The relative proportion of sand, silt and clay (expressed as percentages) in a soil; grouped into standard classes and subclasses in the USDA Soil Survey Manual.

Thermal Cover – Cover used by animals to ameliorate effects of weather. For elk, a stand of conifer trees which are 40 feet or more tall with an average crown closure of 70 percent or more. For deer, cover may include saplings, shrubs or trees at least 5 feet tall with 75 percent crown closure.

Threatened Species – A plant or animal species listed in the Federal Register that the Secretary of the Interior has determined is likely to become endangered within the foreseeable future throughout all or most of its range.

Timber Management Plan (TMP) – A plan which specifically addresses procedures related to the offering and sale of timber volume consistent with the approved allowable sale quantity.

Timber Production Base – Acres included in the calculation of the allowable cut (see Intensive Forest Management Lands).

Timber Production Capability Classification (TPCC) – The process of partitioning forestland into major classes indicating relative suitability to produce timber on a sustained yield basis.

Total Suspended Particulates – All solid or semi-solid material found in the atmosphere.

Travel Corridor – A route followed by animals along a belt or band of suitable cover or habitat.
Understocked – The condition when a plantation of trees fails to meet the minimum requirements for number of well spaced trees per acre.

Uneven-age Management – The application of a single tree or group selection harvest method to create and/or maintain a forest with a wide range of age and diameter classes with a continuous forest canopy.

Utility Corridor – A linear strip of land identified for the present or future location of utility lines within its boundaries.

Viable Population – A wildlife or plant population of sufficient size to maintain its existence over time in spite of normal fluctuations in population levels.

Viewshed – The landscape that can be directly seen, under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

Visibility Protection Plan – A plan that implements the requirements of the Clean Air Act by establishing programs for visibility monitoring; short and long term control strategies; and procedures for program review, coordination and consultation with the Federal Land Managers.

Visual Resources – The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features.

Visual Resource Management (VRM) – The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual Resource Management Classes – Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape.

Water Quality – The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

Water Yield – The quantity of water derived from a unit area of watershed.

Western Oregon Digital Data Base (WODDB) – A very high resolution (1"=400') geographic digital (computer) data base derived from aerial photography for BLM lands in western Oregon to support the 1990 Resource Management Plans, and to provide a long term, high resolution data base for operational use.

Wetlands or Wetland Habitat – Permanently wet or intermittently flooded areas where the water table (fresh, saline, or brackish) is at, near, or above the soil surface for extended intervals, where hydric (wet) soil conditions are normally exhibited, and where depths generally do not exceed two meters. Vegetation generally consists of emergent water loving forms (hydrophytes) which require at least a periodically saturated soil condition for growth and reproduction. In certain instances, vegetation may be completely lacking.

Wet Meadows – Areas where grasses predominate and the soil usually is without standing water during most of the growing season, but is normally waterlogged within a few inches of the ground surface.

Wilderness Study Area (WSA) – A roadless area that has been inventoried and found to be wilderness in character, having few human developments and providing outstanding opportunities for solitude and primitive recreation, as described in Section 603 of the Federal Land Policy and Management Act and Section 2(c) of the Wilderness Act of 1964.

Wildlife Tree – A live tree that could be designated future snag habitat.

Wild River – A river or section of a river that is free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted, which has been designated as such, as part of the National Wild and Scenic Rivers System.

Windthrow – A tree or trees uprooted or felled by the wind.

Withdrawal – A designation which restricts the use of public lands from, or closes them to, the operation of land or mineral disposal laws.

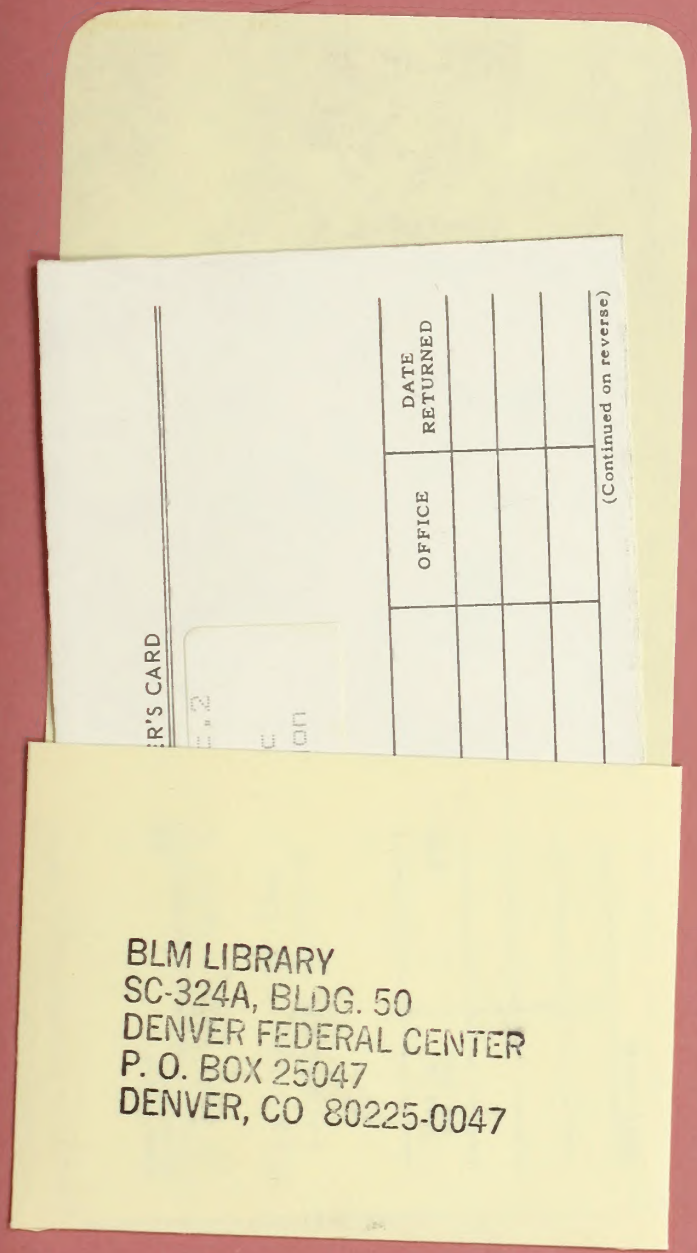
Woodland – Forest land not included in the suitable commercial forest land base for ASQ determination. Includes all noncommercial and nonsuitable forest land.

Xeric Moisture Regime – A soil moisture regime common to those areas that have moist cool winters and warm dry summers. A limited amount of moisture is present but does not occur at optimum periods for plant growth.

Yarding – The act or process of conveying logs to a landing.

Acronyms

ACE	Allowable Cut Effect
ACEC	Area of Critical Environmental Concern
ACMP	Area of Critical Mineral Potential
AMS	Analysis of the Management Situation
ARD	Automated Resource Data
ASQ	Allowable Sale Quantity
AUM	Animal Unit Month
BLM	Bureau of Land Management
BMP	Best Management Practices
CBWR	Coos Bay Wagon Road
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CMAI	Culmination of Mean Annual Increment
COPE	Coastal Oregon Productivity Enhancement
DBH	Diameter Breast Height
DEIS	Draft Environmental Impact Statement
DEQ	Department of Environmental Quality
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERMA	Extensive Recreation Management Area
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
FY	Fiscal Year
HMP	Habitat Management Plan
IDT	Interdisciplinary Team
IMPLAN	Input Model Plan developed by the U.S. Forest Service to measure the economic effects of changes in program-related activities.
IPASS	Interactive Policy Analysis Simulation System developed by the U.S. Forest Service to analyze economic and demographic effects of alternative forest resource management policies.
IPM	Integrated Pest Management
LTSY	Long-Term Sustained Yield
MBF	Thousand Board Feet
MFP	Management Framework Plan
MHA	Minimum Harvest Age
MMBF	Million Board Feet
MMCF	Million Cubic Feet
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
O&C	Oregon and California Act of 1937 (Revested Oregon and California O&C Railroad and Reconveyed Coos Bay Wagon Road Grant Lands.)
ODFW	Oregon Department of Fish and Wildlife
OFPA	Oregon Forest Practices Act
OI	Operations Inventory
ONA	Outstanding Natural Area
ORS	Oregon Revised Statutes
ORV	Off-Road Vehicle
OSDF	Oregon Department of Forestry
OSU	Oregon State University
PCT	Precommercial Thinning
PD	Public Domain
PL	Public Law
PNW	Pacific Northwest Research Station
PPM	Parts Per Million
PSD	Prevention of Significant Deterioration
RMIS	Recreation Management Information System
RMA	Riparian Management Area
RMP	Resource Management Plan
RNA	Research Natural Area
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
SCORP	State Comprehensive Outdoor Recreation Plan
SIP	State Implementation Plan
SRMA	Special Recreation Management Area
SYU	Sustained Yield Unit
T&E	Threatened and Endangered (species)
TMP	Timber Management Plan
TPCC	Timber Production Capability Classification-
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
VRM	Visual Resource Management
WODDB	Western Oregon Digital Data Base
WSA	Wilderness Study Area



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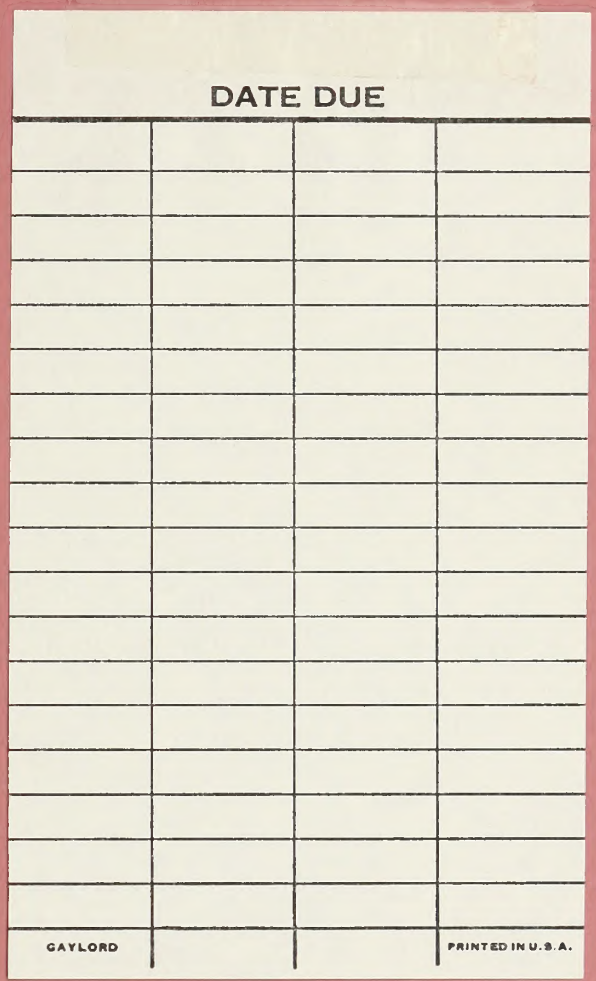

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